

THE FUTURE OF MONEY—PART 3

Y 4. B 22/1:104-27/PT. 3

The Future of Money-Part 3, Serial...

HEARING
BEFORE THE
SUBCOMMITTEE ON
DOMESTIC AND INTERNATIONAL MONETARY POLICY
OF THE
COMMITTEE ON BANKING AND
FINANCIAL SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED FOURTH CONGRESS
SECOND SESSION

MARCH 7, 1996

Printed for the use of the Committee on Banking and Financial Services

Serial No. 104-27



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CONTENTS

	Page
Hearing held on:	
March 7, 1996	1
Appendix:	
March 7, 1996	51

WITNESSES

THURSDAY, MARCH 7, 1996

Brown, James L., Director, Center for Consumer Affairs at the University of Wisconsin	39
Clark, Coley, Corporate Vice President and Group Executive for the Financial Industry Group, Electronic Data Systems	28
Mahan, James S., Chairman and CEO, and Michael S. Karlin, President, Security First Network Bank	13
Nigg, Dudley, Executive Vice President, Wells Fargo Bank, on behalf of the Consumer Bankers Association	3
Norwood, Bill, Executive Director, Card Application Technology Center, Florida State University	35
Page, Jerome F., General Counsel and Vice President for Business Development, MTA Card Co.	31
Wilhide, Richard K., Vice President and Manager of Delivery Systems, Wilmington Trust Co.	11
Wobst, Frank, Chairman and CEO, Huntington Bancshares, Inc., on behalf of the Bankers Roundtable	8

APPENDIX

Prepared statements:	
Castle, Hon. Michael	52
Flake, Hon. Floyd H.	54
Brown, James L.	140
Clark, Coley	119
Mahan, James S., and Michael S. Karlin (with attachments)	89
Nigg, Dudley	58
Norwood, Bill	133
Page, Jerome F.	127
Wilhide, Richard K.	78
Wobst, Frank	67

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Pryce, Hon. Deborah:	
Introduction of Mr. Frank Wobst	155
Kelly, Hon. Sue W.:	
Wilhide, R.K., response to question	157
Page, Jerome F., response to question	158
Brown, James L., response to question	159
Clark, Coley, response to question	162
Norwood, Bill, response to question	163

THE FUTURE OF MONEY, PART 3

THURSDAY, MARCH 7, 1996

U.S. HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON DOMESTIC AND
INTERNATIONAL MONETARY POLICY,
COMMITTEE ON BANKING AND FINANCIAL SERVICES
Washington, DC.

The subcommittee met, pursuant to notice, at 10:08 a.m., in room 2128, Rayburn House Office Building, Hon. Michael Castle [chairman of the subcommittee] presiding.

Present: Chairman Castle, Representatives Metcalf, Kelly, Ney, Fox, and Flake.

Also present: Representatives Leach and Pryce.

Chairman CASTLE. If the subcommittee will come to order. Let me welcome all of you to the House Banking and Financial Services Committee, Subcommittee on Domestic and International Monetary Policy. This is our third hearing on the subject of the future of money.

We do have two new subcommittee members who are not here but may join us, and let me point out and I have already mentioned this to a couple of the witnesses, because of the press of business here, people are going to come and go. We can't do anything about it. It would be nice to have everybody in their seat for the full hearing, but it just doesn't work that way in any circumstance. You are going to have members coming and going as we go through the hearing.

The purpose of these hearings is not to rush to pass legislation regulating these new technologies in electronic money, on-line banking, and so forth, but to focus the attention of the industry, Congress, the Administration and the regulators on the potential of these new financial technologies as well as the possible pitfalls.

This analysis and discussion, I hope, will lead to uniform industry standards and a better understanding by government and industry of the entire picture of the future of money.

Perhaps most important, I hope we can help provide the American public with information on how these new technologies and products may give them more financial freedom and choices in purchasing goods and services and doing their normal banking and financial business.

We have now followed this subject from our first hearing last July with the entrepreneurs who are behind the new technologies. In October, we heard from potential regulators and law enforcement authorities regarding their varying levels of interest and concern about these systems.

We are now about to get the latest insight into a variety of banking strategies for using or reacting to these innovations and in May, we will learn how these new forms of electronic money stream across international borders and provide a mechanism for greatly increased worldwide commerce.

Over the past 2 weeks, I have discussed the future of money with two different groups. In Delaware, on Friday, February 23, we held a Roundtable meeting with a Delaware banking association. There was very active discussion about what the future technology means to our local financial services industry.

This past Monday, I had the opportunity to address a group that was assembled at least partly in response to these hearings. That was the first meeting of the Electronic Commerce Forum, an eclectic cross-industry group, whose only common thread is a belief that these new technologies offer great opportunities for future business.

They came together to discuss setting a private sector agenda to solve as many common problems as possible before turning to the public sector for relief, good advice, I might add. Apparently nothing I said discouraged them because they will meet again next month.

Today we will hear about strategies used by both banks and non-banks, faced with challenges and opportunities offered by the evolving technology of electronic money. In addition, we will hear about how these transaction technologies could affect customers and how these concerns in turn could create demands for additional consumer protection.

The first panel will include Dudley Nigg of Wells Fargo, representing the Consumer Bankers, who will demonstrate the Mondex system of stored value card that Wells is the licensee for in the United States. This is the British development that permits anonymous transfers of electronic cash from Smart cards to third parties and between cards, using an electronic wallet.

Frank Wobst is chairman and CEO of Huntington Bancshares, head of the Bankers Roundtable Technology Task Force, representing one of the most innovative regional banks. He will describe how his operation is planning to implement the latest technology.

Rick Wilhide, a Wilmington Trust Vice President, will describe how this leading fiduciary bank is planning to pursue their interest in stored value systems.

Both Chip Mahan and Michael Karlin, who are CEO and President of Security First Network Bank, will demonstrate how this FDIC-insured institution operates as a virtual bank, with a presence almost exclusively on the Internet.

The second panel will include Coley Clark, who is Electronic Data Systems' VP for the Financial Industry Group. They are ubiquitous in the financial services industry, providing support services to banks and non-banks alike, and they are major participants in an international network known as the Interbank On-Line System, with First Union in the United States and Bank of Scotland and Banco Santander in Europe.

Jerome Page is the General Counsel and VP for development of the New York Metropolitan Transit Authority, MTA Card Company. They are in association with Chemical/Chase in issuing cards

to three million daily riders of the transit system. These cards are expected to be accepted in other New York businesses as well.

Billy Norwood, Executive Director of Florida State University's Card Application Technology Center, will describe how his multi-functional stored value card will be used in Tallahassee with a number of partnerships to provide a broad spectrum of services to Florida State students. He is also consulting with the State of Florida about their plans for similar initiatives.

Finally, Jim Brown is the Director of the University of Wisconsin's Center for Consumer Affairs and will discuss some of the key consumer issues that will no doubt provide for future inquiries and hearings into this area.

We look forward to their testimony in our effort to draw as complete a picture as possible of the impact of new technology in our banking system. I think we will have a few interactive demonstrations, based on some of the items we have here, which Mr. Nigg will be conducting after we have heard from all of the members and witnesses.

I also should let you know that we don't want to limit you too much in terms of your statement. It is usually 5 minutes. Take whatever time you need within some degree of reason to explain what you have, at which point the various members who may be here will have time in which to ask you questions.

Let me first turn to Mr. Leach for any comments he may have.

Mr. LEACH. Thank you, Mr. Chairman. I have no comments. I did want to express my appreciation and respect for the thoughtful manner in which you have raised this subject to congressional review. I think it is a classic issue in which the marketplace is well adherent of public policymakers and it is important that we at least understand the difficulties inherent in some of these issues.

It is going to be an extraordinary new world that we all thought was 21st century and it looks like it is with us today.

Thank you.

Chairman CASTLE. Thank you very much, Mr. Chairman. As you all know, Mr. Leach is the chairman of the Banking Committee and has indicated a personal interest in this. Perhaps at some point we will be having some of these hearings in front of a larger audience, before it is all said and done.

With that, Mr. Nigg, let's turn to you for your testimony, and we will go down the row.

STATEMENT OF DUDLEY NIGG, EXECUTIVE VICE PRESIDENT, WELLS FARGO BANK, ON BEHALF OF THE CONSUMER BANKERS ASSOCIATION

Mr. NIGG. Thank you, Mr. Chairman. Thank you for inviting us here today and thank you, Congressman Leach, for being here to listen to this testimony.

As you pointed out, I represent not only Wells Fargo Bank but also the Consumer Bankers Association. In the Consumer Bankers Association, we formed an alternative retail delivery committee. This committee's purpose is to identify and develop policy issues and solutions that affect the electronic delivery of financial service, retail products and services.

As the first speaker, I thought it might be helpful if I set a little bit of a background as we begin to go through some of these issues that the rest of the panel could sort of pick up on.

Today in the United States, we are in a heavily paper-based transaction environment for consumers. Somewhere in the range of 80 percent of all transactions today by number are either cash or checks. That contrasts with countries like Sweden and Denmark, where it may be exactly the opposite, where approximately 70 to 80 percent of all transactions are actually electronic.

The issue that we face in being in a paper-based transaction environment is very high costs associated with that process. Clearly, there is motivation to move to a more electronic base. Indeed, we think that is beginning to occur.

In 1993, there were approximately 33 billion transactions conducted electronically. That contrasted with 117 billion transactions that were conducted through paper. The electronic transactions are expected to grow at approximately 20 percent per year over the next 5 to 7 years, so that by the year 2000, there is going to be approximately 118 billion transactions done electronically, while the amount of paper transactions will grow modestly to 135 billion.

Why is this happening? What is the change? We actually think there are three elements that are driving this change. The first one we believe is the Internet. It is very easy amongst all the hype of the Internet to lose sight of the fact that the Internet truly is a superior means of communication.

It allows person-to-person, business-to-person communications very efficiently, very easily, and on a broad scale. Today, there are approximately 10 million people accessing the Internet from their homes. That is expected to rise to 29 million people by the turn of the century. As that happens, as that movement occurs, so more and more people are going to be able to do their commercial activities through the Internet. That access point is going to allow people to get a low cost process.

For example, Wells Fargo has chosen as their primary means of delivering their home banking, their PC banking, to use the Internet. Why is that? Because we believe we can develop products in the Internet for less cost and more efficiently than we can through any other channel and we know that all access providers are ultimately going to provide access to the Internet. We think that is a real motivator that has really only appeared in very recent times.

The second thing is the lowering cost of technology. I am sure many of you have heard of Moore's law. Moore's law essentially was derived by one of the founders of Intel and essentially says that every 18 months, the cost of technology halves and the power of technology doubles.

As that process occurs, so we are going to see the availability of cheaper and cheaper access devices.

The other day, Larry Ellison of Oracle actually announced a \$500 access machine for the Internet. We expect that within the next 10 years, it will be cheaper to buy an access device for the Internet than it is to buy a television today. This really is going to change the environment.

The third item that we think is occurring is really the dynamic that occurs with development and with the delivery costs of product. The United States has done a tremendous job in recent years of lowering the cost of actually accessing various manufacturing and incurring more efficient manufacturing.

What we are now going to see is a push to reduce the cost of delivery and there is no question that electronics does make the cost of delivery lower. By introducing that electronic component, we are able to deliver products for less cost.

For example, in Wells Fargo, we have recently introduced an account called the Custom Access Account. What this account does is allow customers who are willing to use only electronic access, access to much lower cost banking. In fact, if they are prepared to have their payroll directly deposited into this account, the account is essentially free.

We are able to drive down the cost of delivery and in so doing, pass that benefit on to the customers. That is not just financial services that can do that. Any company can do that.

The question is what is required then for all of this to take place. We believe there are four areas that need to come together. One is security, and I will talk about that in a moment, the second is infrastructure.

That infrastructure is being built today by technology companies and banks to allow people to literally get into an Internet-type environment and buy products, to actually transact economically, safely, securely and effectively. We expect by the end of this year, that infrastructure will begin to be in place and begin to be used fairly extensively.

The second requirement is standards. You already see that happening. For example, Mastercard and Visa have gotten together to create the SEC standard for the transaction of credit cards across the Internet. We will see more of those kinds of standards developed. The standard-setting bodies are in place. We just need to develop those.

The third thing that we need to have electronic commerce truly take hold is a means of transacting the very high level of cash or low value transactions across the Internet space. That is what is driving people toward the idea of electronic cash, and in particular things like the Mondex card, that you have before you.

What this card is, is a Smart card. Resident on the card is a chip which actually allows information to be stored and value to be stored. That card not only gets used in the physical environment but can be used in the electronic environment.

For example, today at Wells Fargo, we have an employee pilot for this card. You can literally take that card today in our head office building and take it to a PC and load it on a PC. It is only a matter of time and a relatively short time before we will be able to transfer value PC-to-PC across the Internet.

What that does is open up a whole new environment of commerce. Today, it is almost impossible for someone like the *Washington Post*, for example, to send an article across the Internet and have someone pay for it, a 10 cent transaction.

In the future, these kinds of cards and these kinds of devices will allow for secure and low cost 10 cent transactions.

What are the issues that we face? The first issue and one that has been raised many times both in this subcommittee and in other locations is the issue of access. The concern is that what we are going to see here is a bifurcation between the well educated and the more wealthy and the less educated and the less wealthy because the wealthy will have access to technology and others will not.

We believe the exact opposite. We believe that technology will allow us to drive our costs down and as the costs of technology reduce and our costs reduce, there is a tremendous opportunity for us to pass that benefit on to the consumer. As we do that, it means that these devices will become more and more available to the consumer and their access will get less expensive.

The issue is still one of education and what is going to be needed here is a combination of our industry, community groups and other opinion makers, getting the message across to people that they have to understand the electronic environment, because the only way we can really pass on these benefits to the consumer is if they are willing to operate in a more electronic environment.

That is the direction in which we are pushing. We do not pretend we are there yet. I have to tell you that we are highly motivated to do that because we would like to expand banking to a broader and broader sector of the U.S. population. We see this as a means of doing that but we are going to need people's help.

The second area is one of security. I have to say that I believe that is probably the easiest one to solve. The reality is that the Internet and other environments come from a background that used to be and were considered extremely secure. The ARPANET, for example, which was the forerunner of the Internet, was a very secure environment used by many highly respected organizations.

What we have to do is to take that security that already exists, in place and being developed over a number of years, and transport it to the environment that we are working in today. We believe that is doable and we think it is being done today and that we expect that in the long term, certainly from Well's perspective, we think that in the foreseeable future, the Internet and other spaces like that will be more secure, not less secure, than any other environment we have.

It is possible to make the electronic environment more secure, not less secure. We are committed to do that.

The final area is an area of privacy. This is where the Consumer Banking Association has been working very hard. We believe that there is a need for policies to be set and for guidelines to be available. We are working internally and in the CBA to establish guidelines that can be used by financial services companies for privacy.

We believe that the key to that process is the need to allow the consumer to elect whether they want their information to be kept private, and if they do, then to ensure that it is kept private.

One of the things we need to recognize is that when we have asked consumers whether they want privacy or the option of us taking that information and allowing them better information and more access to more and more interesting alternatives, in almost every case, the consumer elects for the better options, for the alternatives, in return for some degradation in privacy.

There is a limit to that clearly. We have to understand that. The consumer's choice needs to be paramount here and we need to establish those guidelines.

Overall, in summary, we would say that we welcome the subcommittee calling these hearings. We think there is a lot to be derived from these and that this is an educational process. We believe that any legislation at this time would be premature. The danger is that legislation will simply serve to slow this process down and we believe that innovation is what is going to drive costs down, drive access up and allow for us to become a more competitive environment.

We would strongly recommend that we continue to look at this area, we continue to focus in this area, but that we resist the temptation to prematurely legislate what is going on here.

We believe that we are committed, and our colleagues in the industry are committed, to self-regulate ourselves for the benefit of our consumers. We believe we need to be given time to do that.

I appreciate this opportunity, Mr. Chairman, and I hope these remarks have been helpful. I would be happy to take questions later and I hope to have an opportunity to demonstrate this device to you a little later on in the session.

[The prepared statement of Mr. Dudley Nigg can be found on page 58 in the appendix.]

Chairman CASTLE. We will certainly give you the opportunity to demonstrate it. That is the most fun thing we are going to do today.

I would like to turn to the distinguished Congresswoman from the State of Ohio, who is an alumni of this subcommittee and has gone onto bigger and better things, to introduce a constituent of hers.

Ms. PRYCE. Thank you, Mr. Chairman. I don't know if bigger and better is really the way I would categorize it. I appreciate the opportunity to be back here with you this morning and for the chance to rejoin you to introduce my friend and a very important business leader from my home town, Columbus, Ohio, Mr. Frank Wobst.

I commend you, Mr. Chairman, for holding this series of very important and fascinating hearings on the subject that is most important to the banking area.

Mr. Wobst is the Chairman and Chief Executive Officer of Huntington Bancshares Inc., a bank holding company headquartered in Columbus, Ohio and operating in 13 States. He is a past Director of the Board of the Federal Reserve Bank of Cleveland and is on the board of a number of corporate and civic organizations.

In 1987, Mr. Wobst was named honorary counsel for the Federal Republic of Germany, the country of his birth.

Mr. Chairman, I am proud to have Huntington National Bank and Huntington Bancshares headquartered in Columbus. I am sure that Mr. Wobst's testimony will be both interesting and informative with regard to the technological developments in currency and payment systems in the United States and abroad.

Thank you for allowing me to be here and to participate in this hearing.

Chairman CASTLE. Thank you, Ms. Pryce. Mr. Wobst, we look forward to hearing from you.

STATEMENT OF FRANK WOBST, CHAIRMAN AND CEO, HUNTINGTON BANCSHARES, ON BEHALF OF THE BANKERS ROUNDTABLE

Mr. WOBST. Mr. Chairman and Congresswoman Pryce, thank you very much for that nice introduction. I am delighted to be here and to have the opportunity to appear before the subcommittee on behalf of The Bankers Roundtable to comment on the future of money as it affects banking and payment systems, both in the United States and abroad.

The Roundtable's membership is open to the 125 largest banking companies in the United States. On March 7 of last year, the Roundtable testified before the House Banking Committee on the significance of technology to financial services' modernization.

My comments today are a followup to that earlier testimony and as indicated in your letter of invitation, Mr. Chairman, I will summarize my remarks this morning and request that my complete statement be included in the hearing record.

I serve as the Roundtable's Technology Task Force chairman, which has been formed to assist the Roundtable membership in sorting through the various issues associated with the advance of technology.

As Chairman and CEO of Huntington Bancshares, a \$20 billion financial institution, as Ms. Pryce indicated, I believe that future success of our institution is tied to employing effectively the new technologies to meet the needs of our customers and the challenges from our competitors.

While many banking institutions have undertaken a variety of initiatives in electronic banking, recent developments in the interest of non-bank providers, have accelerated the velocity of change and the potential for major rearrangements in the provision of financial services.

As this subcommittee's hearings have demonstrated, there is a complexity and a seriousness to these issues which requires us to constantly monitor the changes underway and to seek a better understanding of their impact.

Simply put, we see major opportunities to enhance service to customers, the retail side as well as the wholesale side, and at the same time, to strengthen our financial institutions.

At this time, I think it is clear that the market has yet to sort out, among the various options that seem possible, which delivery systems optimize consumer value while making at the same time business sense.

Once business and consumer needs and choices have become clearer, there will be time for the government to revisit the laws and regulations applicable to the new systems, in order to ensure fairness in the marketplace and safety and soundness in the payment system.

Thus, your subcommittee's pioneering work is of great value in helping lay the groundwork for what may follow in the years to come.

It is the view of the Roundtable that legislative action is not needed at the present time. Any attempt to regulate or direct technological change would be premature and would stifle innovation and competition. It should be left to the marketplace to the maxi-

imum extent possible to pick the winners and the losers in the technological sweepstakes.

Consistent with that will be a concomitant responsibility on the part of all providers to ensure the privacy and safety and security of electronic banking and financial transactions generally.

While the financial services business always has been market-driven, the speed of product development and the cost of error in today's marketplace have impressed upon banks and other financial services providers the importance of ensuring that they do their homework with a special eye to customer utility, cost and value, be it hardware or software or the mix of financial products and services. Consumers and businesses nowadays can accept or reject a system, product or service with unusual speed.

As you know, various experiments are underway or being planned, such as the one in Delaware or the one just previously described in California, to ascertain how customers would react to electronic money technologies.

We at Huntington Bancshares have initiated a number of technology-driven changes in delivery systems, as described in my written statement.

The same market-driven focus has been brought to bear on the Roundtable Technology Task Force. One thing that the Technology Task Force has made abundantly clear is that while definite answers may elude us as we await the next technological breakthrough, it is imperative that we keep pressing ahead and asking critical questions to help focus our thinking.

So far, the Task Force has focused on four areas; delivery systems, payment systems, security and privacy issues, and the role of law and regulation.

Important delivery issues have to do with how banking, financial and information-related services are going to be delivered to customers in the future and what business entities will be involved.

Payment issues include the continued safety and soundness of the payment system and the nature of money in an electronic world. Smart cards, stored value cards, and other forms of electronic money obviously are a central concern of the Task Force, both as delivery and payment vehicles.

The resolution of security and privacy issues is essentially ensuring customers that their electronic transactions will be handled securely and confidentially. Among the legal and regulatory issues is the question of how to ensure that our Nation's banking and financial laws are properly attuned to the needs of customers utilizing electronic commerce.

It is well to keep in mind, as mentioned a moment ago, that the bulk of payments today, both domestic and international, are already made electronically when measured by dollar volume. However, the number of transactions using currency, coin and paper checks, is still enormous and the dollar volumes of those transactions are very significant as chart one accompanying my formal statement illustrates.

In the not-too-distant future, I believe we will see a transition of the smaller denomination payments from traditional to electronic means. The upshot will be greater convenience for consumers and small businesses, higher levels of security and much lower costs.

What we do not know today is what kinds of electronic money and their associated delivery systems will win out. The choices soon to become available in the marketplace range from electronic bill payment and presentment, electronic checks and cash, Smart cards offering various kinds of financial products and services via microchip embedded in plastic, and simple stored value cards that are becoming increasingly prevalent.

The explosion of interest in the Internet in the last 12 months has added intriguing new possibilities. As the appearance of Wells Fargo and Security First Network Bank on this panel attests, we are now seeing banking companies experimenting with on-line product and service offerings to customers through virtual banks worldwide and locally in ways that would have been unthinkable a few years ago. In short, the variety of options is multiplying rapidly.

In conclusion, we have seen much of the commercial world turn to electronic payments and now we see the consumer transactions moving in that same direction.

Time will tell how significant these changes will be. Consequently, public policy will benefit from a degree of patience and understanding as to the unpredictable outcomes resulting from today's technological ferment.

I can assure the subcommittee that the banking industry as represented by The Bankers Roundtable, shares the subcommittee's concerns, that safety and soundness remain a center post of our financial markets and that the public's right to privacy be protected.

A commitment to work together to ensure the strongest, most efficient financial marketplace benefiting users and providers of products and services is in all our interests.

I thank you for listening to my statement.

[The prepared statement of Mr. Frank Wobst can be found on page 67 in the appendix.]

Chairman CASTLE. Thank you, Mr. Wobst. We appreciate your testimony. We look forward to talking with you a little further.

Mr. Rick Wilhide will testify next. As I indicated, he is with Wilmington Trust Company. I happen to represent that particular area. Wilmington Trust Company is my bank, holds the loan on some property that I have. I assume if he is here, he can't foreclose on my mortgage. I am pleased to see Rick here.

I will say this about Delaware. We have, as a lot of the bankers know, been very aggressive about changing our laws and accommodating a lot of new banking areas and interests. We did have a Roundtable on this a couple of weeks ago with our bankers to discuss the future of electronic money.

There is no proprietary interest in that, any State could do it. In my judgment, there are a lot of issues to be handled at the local level as well as at the Federal level in this particular area. It is a fertile field for everybody to pay attention to.

One of the participants at that Roundtable was Mr. Wilhide. We look forward to his testimony. We welcome Mr. Flake.

Mr. FLAKE. Good morning.

**STATEMENT OF RICK WILHIDE, VICE PRESIDENT AND
MANAGER, DELIVERY SYSTEMS, WILMINGTON TRUST
COMPANY**

Mr. WILHIDE. Good morning, Mr. Chairman and members of the subcommittee. It is a great honor to speak with you today at these hearings on the future of money.

As the Chairman indicated, Wilmington Trust Company is his home bank. For those of you who don't know much about us, we are one of the Nation's leading fiduciary institutions serving personal, institutional and corporate clients around the world.

Currently, the company has over \$82 billion of assets in trust, custody and asset management relationships. Wilmington Trust is the ninth largest personal trust bank in the Nation with trust offices in Delaware, Pennsylvania, Maryland, Nevada and Florida.

Wilmington Trust's commercial banking operations are concentrated primarily in Delaware, Maryland and Southeastern Pennsylvania, with 65 banking offices in the region. As of December 29, 1995, the company had \$5.4 billion in assets and \$3.5 billion in loans.

The primary subsidiary, Wilmington Trust Company, was founded in 1903, and is the largest full service, independent commercial bank in Delaware.

Even though we are not as large as other banks that have appeared before you, Wilmington Trust has long been an innovator of electronic delivery systems. We formed the first shared ATM Network in Delaware in 1983. We have been a leader in in-lobby ATMs and self service banking techniques, off premise ATMs at supermarkets and corporate sites, PC platform automation, on-line and off-line debit products, audio response systems, home banking, telephone bill paying, and most recently, stored value card development.

Over 100 banks throughout the world, including Bank of America, First Interstate, Chemical Bank, Corestates, National Bank of Detroit, Sanwa Bank, WestPac, Royal Bank of Canada and Household Bank of England have visited us in Wilmington to gain an understanding of our delivery systems approach and how we use that.

As bankers, we have the responsibility to provide payment mechanisms to meet the needs of our retail and corporate customers. Notwithstanding this responsibility, one of the new payment mechanisms, stored value cards, is developing in the United States.

Stored value cards use magnetic stripe technology or integrated circuit chips to store customer-specific information, including electronic money. The cards can be used to purchase goods or services, store information, control access to accounts and perform many other functions.

Stored value cards represent the next major payment mechanism opportunity to the banking industry.

This new payment mechanism offers clear benefits to merchants and to consumers, reducing cash handling expenses and losses due to fraud, speeding customer transactions at the checkout counter and enhancing consumer convenience and safety.

In addition, many State and Federal Governments are considering stored value cards as an efficient option for dispersing government entitlements. Other private sector institutions market stored

value products to transit riders, university students, telephone customers, vending customers and retail customers.

Bankers have the opportunity and the resources to develop this payment mechanism to its fullest potential by combining stored value functionality with existing bank products and services. This functionality leverages the present bank infrastructure to create stored value functionality.

Payment cards such as credit, debit and ATM cards, existing funds clearing and settlement mechanisms, regional and national ATM/POS networks and retail, corporate and government customer relationships, adding stored value functionality to existing products and services enhances their perceived value to the customer.

The introduction of stored value cards has gained significant momentum over the last year and I believe the pace will quicken. The introduction of this new form of electronic money presents a number of issues that must be addressed.

Initially, safety and soundness. Existing payment mechanisms are built on the foundation of integrity and security. They must work every time so the customer's need is met. Transaction data must be handled in a secure manner that is auditable, to effectively transfer monetary value to the proper party every time. In order for stored value cards to be accepted, these safety and soundness principles must be maintained.

Historically, regulation is necessary in order to maintain safety and soundness. However, stored value cards are in their infancy. It is not possible to determine what regulation is appropriate at this time. This is a situation that requires monitoring to ensure that this financial system has safety and soundness.

Consumer protection is critical in order to maintain consumer confidence, to foster usage and encourage merchant acceptance. You can't have one without the other. Consumer and merchant account and transaction information must be protected by maintaining proper audit trails and encryption techniques. This will allow each electronic money transaction to be authenticated to all parties involved in the transaction.

You have invited me here today to share my experience in the stored value card arena. For the last 4 years, I have met with a number of consumers and merchants in my market on a daily basis. I find that non-banks are penetrating the stored value card market rapidly with little regulation. I understand they are meeting the needs of the market segments. However, the need for safety and soundness or regulation does not lessen.

I encourage you to institute a level playing field for all providers of this form of electronic money, banks and non-banks alike. This will increase the probability that consumers will get an array of choices and at a lower price as well as maintaining integrity and security.

Equal access stored value cards must be available for all. Introducing stored value cards to the un-banked needs to be encouraged. There are a number of entities which could potentially serve this market. They include government itself, banks, colleges and other non-banks. It remains at issue who can best serve this market. A stored value card utilizing an integrated circuit chip could contain a stored value purse for purchases and a separate purse for govern-

ment entitlement programs, giving the recipient equal access.

These are just a few of the issues to be resolved.

Shared systems and alliances will be necessary for many of the electronic money mechanisms of the future. A bank our size cannot build the delivery system that provides the service. We will need to buy access at other banks and find creative ways to leverage our own strengths. We can also use our size as an advantage to move quickly, as we understand the business and look forward to new innovations.

A regulatory environment needs to be created to encourage banks to take an active role in development of this form of electronic money. Alliances among institutions, card associations and the private sector must be encouraged and structured to promote growth of the industry.

It is imperative that banks find themselves on equal footing in this new industry as it evolves. We believe regulation of this new payment mechanism at this time is premature but progress needs to be monitored to ensure security and integrity.

Thank you very much.

[The prepared statement of Mr. Rick Wilhide can be found on page 78 in the appendix.]

Chairman CASTLE. Thank you very much, Mr. Wilhide. We appreciate that. Mr. Mahan, we will turn to you.

STATEMENTS OF CHIP MAHAN, CHAIRMAN AND CEO AND MICHAEL KARLIN, PRESIDENT, SECURITY FIRST NETWORK BANK

Mr. MAHAN. Thank you, Mr. Chairman. Michael Karlin and I are delighted to be here today. I want to compliment Dudley Nigg on his comments because I think he is exactly right in everything that he said. Rick, you talked about the size of your financial institution. Someone told me coming up here today that we were not even close to these banks. I did a little research on that and, in fact, the other assets category of all these banks are bigger than our entire financial institution.

Mr. KARLIN. Chip, could we get the lights to dim just a little bit?

Chairman CASTLE. We will try our best.

Mr. MAHAN. It is amazing to me as we started this project to put the first fully-interacted bank on the Internet, how fast things have been moving. When we thought of this project in the Spring of 1994 and visited a company called Metscape in California, they had 14 employees. Shortly after that in January of 1995, I noticed they were receiving 400,000 hits a day on their home page. I noticed that last week, they had 40 million hits a day on their home page.

It is also interesting as I walked in this meeting, I was handed a Booze Allen study that was conducted in January of this year and just released. Booze Allen's aggressive statistics indicate that they think somewhere in the neighborhood of 2,500 banks will be on the Internet by the year 2000 and in 36 months, they project that 1,500 banks will be in the Internet with 630 of those banks offering full interactive services.

That was our goal in this project, not to just have a home page and an effective brochure of what our products were, but to actually let our customers do their business on the Internet.

We have a couple of slides and I am going to keep my comments very brief. Michael Karlin is going to show you how the bank actually works. I believe a picture is worth 1,000 words.

What was our strategy as an industry, as an individual institution? This was basically it: We wanted to create a bank for the early Internet adopters. We felt like we could actually have an electronic relationship with these folks 24 hours a day, 7 days a week. Not only would we be able to take people out of a branch and reduce our costs, but also have the opportunity to sell them something all day long.

When we opened the bank on October 18, 1995, our first product that Michael will show in a second was a non-interest-bearing checking account. Our goal in this project is to have your entire life on that screen, all of your checking accounts, all of your brokerage activity, all of your credit card activity.

We believe very strongly when the Internet is as ubiquitous as we expect it to be, that access to that particularly non-proprietary delivery channel will make life very easy. I absolutely agree with Dudley's comments about the price.

In our typical ready, aim, fire security-first Cardinal Bancshares approach, we actually made this draft up. It doesn't really make any difference in terms of the different points on both axis, the point is that as we increase the band width into the home, the Internet will become ubiquitous.

We have spent some time in Australia recently visiting with some of those banks. It was interesting over there that the telephone companies are running a 300 megabyte per second fiberoptic line into the home that they expect to have completed in the next 36 months.

To put that into perspective, to download the Encyclopedia Britannica today on a 14.4 modem, takes 37.5 hours. In Australia, in 36 months, they will be able to do it in half a second.

When we can put our customer service representative on that interactive T.V. or the PC, whichever delivery channel we choose over the Internet, where we can answer questions and solve problems, we think the world will change. That is really what these next few slides indicate.

We think that the browser will be ubiquitous, that you will have a 10.5 inch color matrix screen next to your telephone, that you won't have to go up to your den and boot up your computer and take 5 minutes to have it boot up and disable call waiting. We think it will be very similar to a telephone. You hit a button and you will be on the Internet.

I also read this morning that a Japanese firm will be distributing in the fourth quarter of this year a \$600 interactive T.V. box that will have Internet access as well as video games.

Larry Ellison's announcement earlier, as Dudley mentioned, indicates we will have a \$500 NC or network PC by the end of the year.

When we reach this point, we think that our consumers will be very interested in what we are up to.

With that, I am going to turn it over to Michael Karlin to talk a little bit about security on the Web and to talk about exactly what we are doing.

Mr. KARLIN. Let me apologize for having my back to the subcommittee. Technology dictates that I sit in front of this little computer.

What I would like to do is show the subcommittee what we are offering today and also what we are planning on offering, pending regulatory approval, of course, in the next 12 to 18 months.

A customer today will log into the bank and when they come into the bank, the first screen that a customer sees is a summary of all of their accounts with the bank. You have statement balance, register balance, all of the balances that a customer needs to interact with their personal finances.

From here, there are multiple different things they can do. They can go to a statement. This is not a statement that shows up in the mail once every 30 days, that is already 10 days old and obsolete. This is a statement that is updated every single day with access to 24 months' worth of data that lists out all the different types of transactions that a customer can do.

Within each of these line items, if you dig down by clicking on a line item, you can get more information about that particular item.

For example, if you went to the store and did use a paper check, you would be able to click on it once it cleared and actually see a digital image of the check appear on your screen over the Internet. From there, you can plug in who you paid it to, what income and expense item it was attributed to, so you could do personal financial planning/reporting and things of that nature.

From here, you can also enter a register. A register is much more of a chronological listing of all of your transactions, including items that have not cleared the bank. You can put in items to manage those personal finances and once they have cleared the bank, the item will be automatically reconciled. Now there is no more balancing your checkbook.

There is a bill payment section which allows a customer to pay anybody anywhere in the United States simply by entering in a name and address for that customer, that payee. Once the information has been entered in, all they would have to do is check off who they want to pay, the date they want to make that payment and the amount they want paid. When they hit the submit button down at the bottom, it goes and transmits the information over the Internet to the bank and we take care of making that payment for the customer.

All of those items are on a pending payments list so the customer can go in and monitor those payments, clear those payments or stop payment on any one of those items.

There is a full reporting feature which I won't get into but it gives the ability to do cash flow analysis and tax reporting.

What I would like to do now is just show you, back to the beginning, and show you where we are heading with this product over the next 18 months.

When you come into the bank, instead of just seeing those accounts you have, the deposit accounts you have with the bank, you

are going to see a fully interactive personal balance sheet that explains your entire liquid net worth in one screen. No more getting statements at the end of every month from a brokerage account or a bank account or from a CD and having to reconcile those items and try to integrate those into one personal financial statement. This is a system where it automatically updates for you.

For example, if you go in and want to see a brokerage account, you would be able to click on that brokerage account and actually see with 15 minute delayed updates on what the market is doing, 15 minute delayed updates on a portfolio. Again, digging down into that, you would be able to see a history of all of your transactions in that portfolio.

If you had set an interactive stock watch to notify you if the market conditions change on any stock you are interested in, you would get a flag up here. If you click on that flag, it will tell you that some of these items have already hit, Dell Computer has hit 40. It can be done over the Internet. It can be done on a pager. It can be done on a fax machine.

Once you click on that item, the item can be set to be paid. When you actually place the order, if you don't have the money in your brokerage account, there is no more worrying about how do you get it there. All you need to do is say, take it from my checking account, take it from my money market account, authorize the trade, and the same thing can happen with credit cards, insurance, everything tied together in one interactive statement.

That is the end of the demo. I would like to make just one final point that I think everyone is interested in. That is on security.

When you are dealing with the Internet, there are two areas that you have to be concerned about on security. One is how does the information get from the customer to the bank. It has to be put into some sort of armored car. Encrypted is the way it is done today. The problem is that too many institutions don't understand how you take the information once it gets to the bank and put it into a vault. The problem is there is not a lot of widely distributed technology like encryption that is used to actually store the data.

That is a system that we have used that for the first time outside of the government or military or intelligence communities has actually been used in a commercial environment and that is a B-1 level trusted operating system that is now a Hewlett-Packard product.

As I was mentioning, all of the attention has been focused on encryption. The problem is we have to be concerned about that, but if one packet of information is taken off the Internet and it is credit card information or bill payment instructions, there is limited liability there because it costs a lot of money to break open every single one of those packets.

What happens when somebody digs into the database of the bank and now they have millions of transactions? I would certainly like to fight one guy trying to take \$100,000 out of one account versus having to fight someone who has the ability to take \$1 out of 100,000 accounts.

The only comment we would make on security, as the other panelists have said, we believe security exists. It is a matter of implementing it correctly. It is a matter of monitoring it, auditing it, and

we really believe the emphasis needs to be on the server side of security.

Thank you very much for the time.

[The prepared statements of Mr. James Mahan and Mr. Michael Karlin can be found on page 89 in the appendix.]

Chairman CASTLE. Thank you, Mr. Karlin. Mr. Mahan, I assume you have nothing more to add at this time, is that correct?

Mr. MAHAN. Yes, I have completed.

Chairman CASTLE. We said earlier that we would return to Mr. Nigg to go over the Mondex demonstration. I think this is the time for that. Maybe we can get the lights back on so we can see.

Mr. NIGG. Perhaps I could pretend at this point that I'm a merchant and you are my customers. Each of you should have in front of you a Mondex card and maybe you could pick that card up. Each of you should also have in front of you a little card reader, which essentially is just a key chain.

If you look at this card, you will see that it has on it a gold square. That is actually a microprocessor. If you take that microprocessor and stick it in your card reader, you should be able to see on the card reader the value on your card, and hopefully what each of you will find there is that you have \$5 on that card. We have generously contributed to you \$5, which by the way, you can't use anywhere so you don't need to be that concerned about it.

[Laughter.]

If you come to San Francisco, you can buy your coffee with this card at the local Starbucks. We are actually using these cards in practice in an employee pilot where we have signed up 25 merchants.

You have all seen your value there on the card and you also see that it says USD on it, indicating that the value is in U.S. dollars.

I am going to take the chairman's card, if I may, and I am going to actually pretend that the chairman is going to do a transaction here. I am here, the merchant. Let's assume I am a small merchant, fast food, a newspaper, something like that. The device I have here is a portable device, battery driven. I am going to enter into this device the fact that the chairman is going to do a \$5 transaction.

If I put the value of the transaction in here, I am going to take the chairman's card and put it in the machine. It says checking. It indicates the balance of the chairman's card, which is \$5. It then executes the transaction. The sale is in process. It takes the money off the card. It tells him he has no value on his card.

I take the card out, give it back to the chairman. The transaction is completed and Mr. Chairman, perhaps you could just put it in your card reader. How much value do you now have on your card?

Chairman CASTLE. Zero.

Mr. NIGG. Zero, yes. I took all the money off the card. I know the chairman is going to be very depressed if I continue to do that, so what I thought I would do is give him the money back. It just so happens I happen to have a wallet in my pocket which happens to have money in it.

I will take the chairman's card again, stick it in this wallet. What I am going to do is activate the wallet and we will leave wal-

lets for everyone to have a little experiment with later. I am going to actually transfer \$5 to the chairman's card.

I hit the button here, it says checking. That is a protocol to make sure it is secure. It then says transferring. Then it says transferred, as quickly as that. Now I am going to take the card out, hand it back to the chairman and he is going to check whether he has \$5 on that card again.

Chairman CASTLE. Yes, \$5.

Mr. NIGG. Indeed he does.

Chairman CASTLE. He has to report that as his gift.

[Laughter.]

When you put that \$5 on, who are you? Are you the bank at that point, with that electronic wallet that you have?

Mr. NIGG. With the electronic wallet, I could be the bank. I could be another merchant. I could be a cab driver, for example, giving you a refund, or in fact, I could be just one individual giving it to another individual.

What is interesting here is one of the concerns that you need to have, of course, is what is the audit trail here. How do I know who is doing what. It just so happens that if I put my card in this particular wallet here and if I show this transaction to the Congressman here, what does that say? It says a debit transaction, right, of how much?

Mr. FLAKE. Five dollars.

Mr. NIGG. Five dollars. Stored on this card in fact is actually up to ten transactions. It actually has an audit trail on the card. It so happens that we as a financial institution can reach in when that card gets loaded with value and actually extract those balances and those transactions and audit them, if we so wish. You wouldn't want to do it with every transaction because remember, we talked about the billions of transactions that exist. It is just simply not economical to capture every one of them.

From an audit perspective, from a money laundering perspective, it is possible to reach into the card and get this information, to make sure that the card is not being abused.

By the way, this card that you have before you here has a limit on it of just \$200. It is not possible, for example, to take \$10,000 and launder it using a card like this. We can restrict the amount of the card. The merchant card has more value on it. Inside this machine is a chip just like the one on the card. That has more value. Again, we can issue those. Because we have control over which cards are valid and which operate, we can actually identify the merchant, make sure and indeed, upload their transactions and verify they are not abusing the use of the card.

By completing the ring, we are able to do very low cost transactions very efficiently. These are in the early days. This is in the test environment. Over time, you can see this can be a multi-functional card that would have your health records on it, loyalty programs and possibly EBT, electronic benefits transfer and so on, all embedded in the card and all useable in a very efficient way.

Chairman CASTLE. As an example, you used a cab driver as an example. How does a cab driver get into this electronic wallet, the ability to transfer up to \$200? Does he go in and get \$200 initially

and then trade up and down from that, based on transactions of people who hand him the card?

Mr. NIGG. The beauty of this process, of course, is that you will notice there was no change involved here. If that transaction had been 27 cents, you would have just given me 27 cents. He can start with a blank sheet essentially and just pay each fare as it comes along. He doesn't need change any more.

By the way, of course, this is much more secure. Stealing that money is a lot harder and it is a lot less likely that a cab driver is going to be threatened because how do you get the money out of the machine? The reality is that unless you have a card and the security device, it is not possible to do so.

It provides for a more secure environment. You can even lock this card. For example, someone who wished to could actually put a lock on the card and then no one else could actually access the card.

Mr. FLAKE. What if you lose it?

Mr. NIGG. If you lose it, it is just like cash, so you have lost your money. In that sense, it is very like cash. If you lose the card, you lose the card.

In practice, what we are probably going to do is insure the consumer for some amount on the card, so that if they lose it, we will refund the amount that they said was on the card at any moment in time, but obviously, we are going to be judicious about how we do that. We certainly aren't going to let them do it four or five times in a row.

Mr. FLAKE. Will you have a special card for New York taxi drivers?

[Laughter.]

Chairman CASTLE. From a New Yorker.

One more question just to follow up on that. I understand the merchant card. Who would have the electronic wallet? Are these sort of smaller merchants, like a taxi driver and that kind of person?

Mr. NIGG. We think that smaller merchants would have this. There is an amusing promotional video which shows, for example, the bellboys with one of these so they can get their tips onto the device. That is a little far fetched, I agree.

Individuals may have this wallet. I have a wallet. I keep it. I use it to lock my card, to move transactions around and to check where I have spent my money. These will be available to anybody who gets the card.

Obviously, the card itself over time is going to be relatively low cost. We estimate that within a year or two, there will be about a \$3 to \$5 cost of the card. The card reader, the little key fob, is very inexpensive. The wallet is a little more expensive. People who needed the wallet, or wanted the wallet, would have to pay for this device.

Chairman CASTLE. Obviously, this will never come into common usage unless a lot of merchants started to use it, just as Mastercard and Visa, needed to develop a merchant network.

Mr. NIGG. That's correct. Frankly, we are not promoting this particular approach, although we think it is a very interesting device.

We do think that over time, more and more merchants will want to take this device, particularly small value merchants.

The question is why would they want to do that. The answer is because of the very low cost that they can process transactions with.

If you look at what takes time with a small merchant today, it is giving change. It is the risk that someone pilfers the money. It is getting the money to the bank. These are expensive, difficult and often worrying processes.

With this device, the reality is that you can do all of that very efficiently and there is a version of this device which actually plugs into a telephone and allows the merchant to upload the value from the device directly to the bank, without ever having to go to the bank or carry money around.

We think that the merchants will find this attractive, as long as this card is out there. It is the old chicken-and-egg situation. First you have to get the cards out and then the merchants will sign up. This will take time. We expect that electronic transactions and particularly the Internet, will drive this kind of device. People will want to do purchasing in the Internet environment and this does facilitate that.

Chairman CASTLE. That is interesting. Let me formally welcome Mr. Flake here, who is of course the ranking member of this committee and Mr. Metcalf and Mr. Ney who are two distinguished members of the committee.

We will ask a few questions. We do have another panel. We don't want to spend too long on the questions.

Mr. Wobst, I would like to hear from you first of all, if you can, I would like to hear you critique the Mondex system that Mr. Nigg just presented, critique not necessarily meaning criticism but what potential problems do you see in that to the monetary system that we have today.

Mr. WOBST. As far as the monetary system generally is concerned, as far as monetary policy is concerned, I don't think it will have any immediate tremendous impact. This is a consumer benefit. I have a hard time really criticizing it because we agree and we are working on a similar project with our own bank.

I think one of our challenges is going to be, and this is something that the Task Force of the Roundtable is working on, to develop some common standards on an industry-wide basis, so that these kinds of devices are universally acceptable. That may involve the other banks, but I think in England, for example, the Mondex is cooperating with the British Telecom, if I'm not mistaken. Actually, you can use your own telephone to reload, transfer funds from your checking accounts into this card to reload it, for all practical purposes.

If we have industry concerns, it is one of cooperation between institutions and developing standards. I think progress has already been made in terms of ensuring security and privacy and confidentiality of the transaction.

Chairman CASTLE. Thank you. Mr. Nigg, at the very beginning of your statement, you made a reference to the percentage of electronic transactions in Europe, I believe, versus America.

Could you repeat that? I was interested in that. It seemed to me it was much higher in Europe. I wondered why.

Mr. NIGG. You recall that what I said was that by number, approximately 80 percent of transactions in the United States were either check or cash and if you took a country like Denmark, that would almost be exactly the opposite way around, about 80 percent of transactions would be electronic and only 20 percent would be by value, cash and check.

Chairman CASTLE. Why?

Mr. NIGG. There are really twofold reasons, I think. The first is that in Europe, it is dominated by large and few institutions, financial institutions, and they tend to have created central clearing systems that are very efficient in terms of the way they work. It is easy for people to direct debit and to charge each other.

The other, this is a theory of what we think is going on here, for reasons that are really quite unclear, the Americans in general are very concerned about big business "ripping them off" or not giving them the right information. Whereas, in Europe, you tend to allow the bank and the utility to simply connect their transactions, so the utility bills the bank, the bank pays and debits your checking account and you see the bill after the event.

Most of us would not want to do that. We would like to see the bill first and then decide whether we want to pay it, looking at whether it is reasonable.

We have been very reticent about actually allowing electronic commerce to occur. The beauty of on-line commerce is that you can see the transaction or the bill and then elect to pay it right there and then very efficiently, so we get the best of both worlds as we move toward electronic payments.

Chairman CASTLE. Thank you, Mr. Nigg.

Mr. Mahan, you mentioned price on all this. Obviously, it is very evident to me that an electronic transaction is probably less expensive than paperwork and that kind of thing. It leads me to my next question which is the speed and the acceptability of the things that you and Mr. Karlin showed on that screen. That is really more advanced than I would have guessed anybody is, and a little bit futuristic, but it is reality, too.

There are a lot of us who have a little problem with a computer. We do need one button for the Internet or whatever. I basically can read my E-Mail and that's about as far as I go.

I always look at the automatic teller machines which took some time to come into usage and all of a sudden just mushroomed in this country.

What are your thoughts about the speed with which all of this kind of electronic processing will take place? The Internet is growing at a rate much faster than anybody expected. I guess it is going to be a guesstimate at best, but to be able to project how fast we are going to get to this point where we are not just talking about something theoretical. We are talking about something very real taking over commercial transactions in this country.

Mr. MAHAN. I think it is going to happen very, very fast. I believe it gets back to the price point that we talked about earlier.

When we have the distribution of less than \$500 network computers in the home and the effective dial tone browser that we

talked about, and I am always reminded of my mother saying, "I'm not computer literate." What Michael Karlin just did, to access all of his account information on all of his assets and all of his liabilities, was merely point and click. You pull up your browser. You access your bank account. You will do that in one minute. The next minute you will go to the travel agency and order airline tickets. Who knows where you will go next, to look at the weather or whatever.

It is not a difficult thing to do. The infrastructure is in place to pull that off today. Everything that you saw in our demonstration is coming over a 14 or 28.8 modem. It is all text. It flies and it works.

Mr. KARLIN. I would also like to add to that. I think in addition to that, when you have the high speed access into the home and at that point, what you are doing is to get on the Internet, first of all, all you are doing is calling the cable company or calling the telephone company or a like company, like you do today. They come out, they install everything and they say, "here's the button, turn it on."

At that point, if you were going through the product I was showing you and you came upon a glitch that you couldn't understand or didn't want to figure out how to do, when the speed of the network is there, all you are going to do is click a little button or hit a little thing on your remote control and a person's picture is going to pop up, an actual human being is going to say, "Mr. Sherman, you look like you are looking at your checking account today. Is there anything I can help you with?"

It is going to be a face-to-face transaction. There is already technology today that allows me to take control of your device across the network. I can say, actually, let me show you how you do a bill payment. Just sit back and relax.

When the access becomes that easy and the speed is such that you can actually talk to a human being and add that human element, it is going to become much more widely accepted. I agree with Chip, it is going to be very soon, 24 to 36 months.

Chairman CASTLE. We saw this in the movie "Disclosure," was it, the little angel helping out?

Mr. Wilhide, I have a question for you, and then I will turn it over to Mr. Flake. I think you mentioned this before. I am not sure. You indicated the importance of dealing with the non-banked.

Our committee has an abiding concern with those who have limited access to banking services, simply because of their limited assets, the cost of banking services or whatever it may be.

I worry that if we are going to get into a sophisticated system of banking, that could leave people even further behind because of needs to have Smart wallets or computers or whatever it may be, although the card doesn't necessarily relate to that. It could be a factor.

I also know there are States which are experimenting as is the Federal Government with the use of Smart card type technology for certain benefit transfers to individuals. This is particularly prevalent in the areas of food stamps, for example. There has been some fraud. It could be in AFDC and other areas where it would be bet-

ter perhaps to give people cards with other people having access to how they could be cashed or whatever.

I think it is very important as the banking community advances in this area that we do not leave any segment of our population behind. I would be interested in your comments on that.

Mr. WILHIDE. First of all, there are a significant number of recipients across the United States. Most of the efforts at this point, as you point out rightfully, have been primarily government-sponsored, whether it is at the Federal or State level. What I am suggesting is that there is a way that perhaps—quite frankly, it is a fairly regimented approach that only provides those recipients those particular items.

What I am suggesting is there could be opportunities to work with, whether it is banks or non-banks or others, to incorporate those type of recipient programs into programs that the other entities would have.

What I am saying is I would bring that into what we would call an open environment, meaning that they could be using their cards on an equal access basis with others, rather than in a very closed environment that you are seeing right now primarily. Ultimately, I believe the cost then would come down.

Chairman CASTLE. Thank you, Mr. Wilhide. Mr. Flake?

Mr. FLAKE. Thank you very much, Mr. Chairman. I think this is a fascinating prospect as it relates to moving into the new age of technology and certainly it would seem to me that given the role that banks play in our society, it is an appropriate place for a good beginning.

Having said that, I think there are some concerns, obviously, as we look at what has happened in many communities, where there has not been banking services. Branches are not there. ATMs are limited, if they are there at all. Now we introduce a new product, a new means of providing opportunities for technology to fill a gap.

It is my hope that a part of this process touches on the unbanked and low income consumers.

I would just like to know from any of you who wish to take it on, how you perceive at the moment this particular technology working. Do you see it being more accessible than have been traditional technological advances in the banking community, which have forced many communities to have to deal with check cashing services basically that charge numerous sums of money for people to do basic cash kind of transactions?

I think this is phenomenal in terms of security. It is great in terms of what appears to be a user friendly type of technology. The question becomes will it be available to all people in all places. I would like for you to take that question and answer it, if you can.

Mr. NIGG. Perhaps I could kick that off, Congressman, with a real live example that is very immediate to us.

We have not traditionally in Wells Fargo had a branch in South Central L.A. Inevitably large expensive branches tend to be located in neighborhoods where you feel you can get the most commercial benefit. However, we have now started moving away from those large monolithic branches toward supermarket branches and supermarket outlets that are essentially technologically oriented although they are staffed.

It is interesting that by the end of this year, we will have three of those outlets in South Central L.A. What you see is that the power of technology is allowing us to lower the cost of delivery and therefore disperse that delivery more broadly.

What is interesting about these mini-branches, if you like, is that not only do they have an ATM there and a telephone, but they also have a person whose sole job in life is to make sure that people visiting that branch get to understand how to use the technology.

What we are very motivated to do is have people in that neighborhood sign up for low cost transaction accounts that they can use in the neighborhood. We think that is a real move forward. We think that this kind of technology like Smart cards is simply going to move that process forward. It is our desire to bank the unbanked. I do not think there is any question about it. Clearly, we need to do that and profitably. That is why we are in business.

Having said that, we are very motivated to do so. We think the opportunity the technology provides in lowering costs is for us to disperse this more.

That is an actual example where we are truly getting more diverse and getting into more neighborhoods than we would have traditionally have gotten into.

Mr. FLAKE. I see some others ready to answer; but one question. When you talk about low cost transition accounts and signing up, you are talking about a cost that is comparable to the current charges for an account?

Mr. NIGG. We believe that the cost may be less than what you have typically thought of a current account and certainly less than the average cash checking facility.

Mr. FLAKE. Is that based on a fee per transaction?

Mr. NIGG. It is based on an overall cost of the account, a monthly charge, as opposed to a transaction fee.

Mr. WOBST. If I may address the question as well, there are more than just the delivery mechanisms we have talked about here, primarily the PC and the kind of Smart card that we are talking about here.

The advances have been made in telephone banking, for example, simply by means of a touch tone phone, and for lack of another word, the terminal, particularly into low cost neighborhoods who have not been using that kind of facility before.

We have done the same thing as Wells Fargo. We are creating offices that are open 24 hours a day, 7 days a week, are staffed minimally, only during the usual business hours. We are inviting people, particularly in lower income neighborhoods into these offices and offer them access accounts, just about the same name as yours, at a very low cost, \$2 a month and unlimited transactions for those people who use electronic means to transact their business.

We will be able to do more in low- and moderate-income neighborhoods if Governments and employers use more direct deposit payroll and also further the usage of traditional banking services, which in those neighborhoods that you are talking about has not been the case and whose fault that is, we can never be sure.

The devices that we are bringing in today really make it possible, without major investments in hardware for all those people to par-

ticipate in a very much accelerated and much more price-advantageous system of financial services, including bill paying. You can do it by telephone. Everybody has one.

Mr. FLAKE. My time has about expired. Those who want to answer, I will ask for unanimous consent to allow them to do so, Mr. Chairman.

Chairman CASTLE. Certainly. Sometimes when we ask one question to five people, they feel like they have to answer. Try to keep your answers relatively brief. The members may want to just limit the number of answers. Thank you.

Mr. WILHIDE. Real quick. As I stated in my testimony, we have been involved with EPS for approximately 4 years in the State of Delaware looking at an open environment for stored value cards.

Quite frankly, I think that within the first three months, we started talking about the un-banked and that segment. We felt it was an important part of our program when we would be ready to move forward.

The issue you come up with more than anything else, I think quite frankly, is one of distribution in some cases. We don't have direct distribution into some of those areas and so forth and that is the issue you really have to address.

I think, for example, some of the other people here today have done a good job of that. Maybe you work through the transit authority because within the city you are doing a lot of bus transportation and things like that. You work with those agencies for distribution and also combine.

I think there are ways to do it and I think we have to do it, quite frankly.

Mr. MAHAN. Very quickly, we passionately believe that what we are doing on the Internet or all these other things we have talked about today dramatically changes the components of the income statement of a bank. Typically, a bank will spend about 3.5 percent of its average assets in overhead. The reason we have to charge these fees is in order to recoup that overhead.

We believe at our little bank, with only eight employees, when we have partnered with everyone else on the back end, that we can operate this bank on an overhead of less than 1 percent. Who is going to get the 2.5? The consumer is going to get the 2.5, either through the spread or the reduction of fees. We don't have time to go into it more, but basically we are approaching it differently.

Mr. FLAKE. I will have to yield my time. The only problem with that is you are talking about the necessity of a computer, first of all. In many of the communities that are un-banked, they are the basic communities in which even the schools are not providing young people with access to the ability to get the skills nor the ability to use such capability.

There are a whole lot of issues here that I think are going to have to be worked through. I commend you for where we are in this process. I think we are going to have to make sure that this is not another technological advance that leaves a whole group of people behind. You can't solve that problem at this table this morning. At least I'd like to put it on your minds to think about.

Chairman CASTLE. Thank you, Mr. Flake.

Let me just tell you where we are. You heard the buzzers. We have a vote. We will probably not have another vote for at least an hour after that. We will have to break here in about five minutes to go cast that vote and we will return in about 10 minutes after that.

The second panel, unfortunately, will have to wait for that time, plus there are Members who may wish to ask questions of this panel. I don't know everybody's schedule here. There will be about a 15 minute break here in about five minutes.

Let's see if we can get in as many questions as possible. I don't know if we can finish this panel or not. All Members are certainly entitled to their five minutes to ask whatever questions they wish. Mr. Metcalf.

Mr. METCALF. Thank you, Mr. Chairman.

We have always thought that the money supply was really important in this whole Nation. With all these systems, we are using a lot of credit cards. I just want to ask this question relative to credit cards; what credit cards do is to monetize the reliability or the credit of millions of people.

Is this in any way—maybe the Federal Reserve has already lost control of the money supply. Is this something we should be concerned about or should we ignore it, what? Any comments on that? Does anyone have a brief comment?

Mr. WOBST. I think it would be premature to worry too much about it yet because while the numbers of transactions are great that will be affected by all these innovations, the total, the aggregate dollar amounts involved, as a percentage of the monetary aggregates, in the foreseeable future, in my opinion, are not going to be that great that they should be a major concern for the Federal Reserve.

Mr. METCALF. Any other comments?

[No response.]

I will ask my second question and that is security. You have talked a lot about security. I know you have thought a lot more about it. I have a basic rule. If the human mind can devise it, the criminal mind can break into it.

I've come from a different generation. These things are new and a little suspicious. Yet I see the advantage and certainly it is coming.

What about that? You really can devise something that the criminal kid out there who is 18 years old and a computer whiz can't break into?

Mr. KARLIN. I'll take a stab at that one. You are never going to get fraud out of the system. I agree 100 percent with what you said. There are always going to be bad people out there. They are going to spend a lot of time and a lot of money trying to get at these dollars.

My feeling is fraud is going to be in the system, but when you digitize it and you put things in place like encryption, you are going to reduce the amount of fraud and make the amount of loss a lot less.

What is more difficult? Somebody to have a mathematical degree to be able to go in and understand encryption algorithms to break

them or anybody who can have a gun in their hand and walk into a bank branch and demand that the teller turn over the money.

I am a lot more afraid of the millions of people that have that first capability versus the very few that have the other.

Mr. METCALF. As this gets more organized, it gets huge and a person that really finally did, one out of over 200 million might do that, could they not cause monumental damage to a system that is highly organized and built around this?

Mr. WILHIDE. If I could comment on that, from the perspectives I've talked about, that is what is critical, that there is an auditable trail, if a breach occurs, it can be thoroughly investigated.

I think each system that is currently being offered and under development and so forth, that is one of the responsibilities that we have.

When I say "auditable," what I am talking about is that today, our transactions and so forth flow through a central source where they are kept, if you will. That is something that needs to be looked at in all these types of technologies.

Chairman CASTLE. Mr. Ney had one question and Mrs. Kelly, who is down at the end, will submit her questions in writing. She did have a number of questions. She will submit them in writing so we can go onto the next panel. Perhaps we only have about seven or eight minutes. Mr. Ney?

Mr. NEY. Thank you, panel, especially you, Mr. Wobst, who is from my State.

I wanted to ask, should all firms providing system services, the payment services, should they be covered by Federal banking laws?

Mr. WOBST. All firms?

Mr. NEY. Anybody that is using the payment services end of it.

Mr. WOBST. Generally speaking, probably yes. That is my own personal opinion. On the other hand, I want to be very cautious as I answer that way because this whole area is in such a state of flux, that definitions will make a very great difference.

When we are talking about the taxi driver who has this little wallet machine and uses it as his own way to store values for extended periods of time, if he wants, is he a user? I guess he would be a user and he shouldn't be governed by any Federal regulation or banking regulation.

I would say for the time being, we ought to just sit back, watch the developments, and they are very rapid, as you heard this morning, and I think the banking industry is as much interested as you are in making sure that the system that will eventually evolve will be safe, sound and protective of the consumers' interests.

Mr. WILHIDE. I would just add if it is a system provider, someone who is providing the service, moving the funds and so forth and that type of thing, regardless of who it is, we should be looking at it.

Chairman CASTLE. Let me thank the panel a great deal. This panel is excused at this point. Of course, you are more than welcome to stay. We will now stand in recess for about 15 minutes. When we resume, we will resume with the testimony of the second panel. Thank you.

[Recess.]

Chairman CASTLE. If the subcommittee could come to order and the witnesses could take their seats.

I am going to go through your biographies, not to embarrass you because I always hate it when I give speeches of people going through this bio of what you have done, but because it has been a while since I mentioned you in my opening, I want to make sure that everyone who is here understands who you are and what you are testifying to. As I get to each one of you to make your presentation, I will read a little bit about you.

Coley Clark is a Corporate Vice President for Electronic Data Systems and is Group Executive in charge of the Financial Industry Group.

He joined EDS in 1971 in the systems engineering development program and became SED Manager at the California Blue Shield account within the Insurance Group. In 1972, he became a systems engineer, then an account manager for the Champus account in San Francisco. In 1975, Mr. Clark went to the Banking Division as a sales rep and in 1978, Mr. Clark became Western Regional Sales Manager and was appointed Banking Division Vice President and Sales Manager, with the responsibility for sales and marketing activities in 1980.

He was named Vice President and Director of Marketing for the Financial Commercial Group in 1984 and assumed his current responsibilities in 1986 and was named a Corporate Officer in 1989.

He serves as Chairman of the Board of IBOS Limited and on the Board of Directors of Interactive Transaction Partners. He is a member of the Salesmanship Club of Dallas and serves on the Board and is President of the Dallas Theater Center. Additionally, he is on the Boards of the Dallas Business Committee for the Arts, the University of Texas at Dallas and the Center for the Study of Financial Institutions and Markets at Southern Methodist University and he received his education from the University of Texas at Austin as a veteran of the U.S. Army.

Mr. Clark, we welcome you here today and look forward to your comments, sir.

STATEMENT OF COLEY CLARK, CORPORATE VICE PRESIDENT AND GROUP EXECUTIVE FOR THE FINANCIAL INDUSTRY GROUP, ELECTRONIC DATA SYSTEMS

Mr. CLARK. Thank you, Mr. Chairman.

As you mentioned, I represent EDS, a global information technology services company. The first thing I would like to do is just to applaud you for your efforts to better understand the technologies underlying electronic commerce.

EDS is a company whose expertise is in applying information technology to improve the business performance of our customers. We don't manufacture hardware or sell packaged software. We provide systems integration and transaction processing services to customers in really all major industries, communications, manufacturing, retail, energy, transportation and financial services.

Last year we reported \$12.4 billion in revenues, 14 percent of that amount or about \$1.7 billion was in support of the global financial services industry, a share of the market that includes processing for more than 5,500 financial services firms, representing

every kind of financial services provider, banks and non-banks alike.

Our transaction processing services span the scope of the payments system from checks, credit and debit cards and ATMs to electronic check presentment, electronic settlement, stored value cards and cross border exchange. We are also currently supporting customer initiatives related to the Internet.

Consequently, we do have a critical stake in the direction of electronic commerce and ultimately the proposition of electronic money.

However, the emergence of new on-line technologies will not change EDS' bank-centric approach to our services. EDS is and will continue to be a behind-the-scenes facilitator of technology services for banks and other financial service providers who in turn offer these services to consumers.

Any discussion of the future of electronic commerce should be prefaced with a caveat. There is a lot of hype surrounding this subject which can make it difficult to separate fact from fiction.

If you believe what you read, it would seem that the brave new world of on-line commerce is in fact already a reality. I think it may be time to take a look at the issue from a more detached perspective, to take a virtual reality check, if you will, based on an appreciation of the banking industry's response to technological advances in both delivery and payments throughout recent history.

From my perspective, it will take years, maybe a decade or more, before on-line commerce becomes a primary method for consumer banking. It is clear that the banks have generally embraced and often led the development of innovations in the payment systems, that banks today are a leading change agent in electronic service delivery and that banks and their role in the payments system will not be particularly advantaged or disadvantaged by current changes in electronic commerce.

Despite current wisdom to the contrary, the Internet is no more a part of the payments systems than is say Home Depot or Macy's. It is simply another merchant location. Where you present a credit card, whether in cyberspace or at the local mall, is irrelevant. What is relevant is the method of payment.

The advent of alternative payment mechanisms such as Smart cards and electronic cash does not change the payment method. The underlying system is the same. That system is primarily controlled by banks. To imply that the Internet itself is a threat to banks' hold on the payments system is misleading.

For now, the major issue surrounding the Internet, as stated previously, is security. It is an issue for financial service providers, merchants and consumers alike. I believe it will be increasingly important for banks and technology companies alike to devote time and energy into making Internet transactions more secure before electronic commerce can be successfully conducted on the Internet.

Certainly it is not an issue that will be addressed overnight and it may never be resolved in total. I can assure you that the industry is attempting to address these issues.

This brings me to my second point. The market, that is the consumer, is key to the success of electronic commerce and electronic money. I don't believe consumers en masse, including all of

us in this room, will embrace the concept any time soon. Look at our behavior historically.

Twenty-five years ago, industry experts were predicting the extinction of checks by the 1990's, the so-called checkless society. Instead, we have seen check volumes continue to rise, albeit not at the same growth rates as in the past, and ironically, the majority of home banking bill payment systems, both PC-based and phone-based, are not truly electronic, since in many cases those payments are ultimately fulfilled with checks written and mailed by home banking vendors, including us.

Many people were also skeptical about direct deposit when it was first available. It took consumers 20 years to get accustomed to using ATMs. Point-of-sale has been slow to take off. Banking by PC is hardly a new idea. It was introduced in the mid-1980's and virtually ignored by consumers.

Despite the much publicized hunger that consumers have today to use their PCs to do electronic banking, current demand for these capabilities is still relatively low. In fact, only 1 percent of the 100 million U.S. households have signed up for home banking services.

It is true that consumer banking will probably change faster as the Nintendo generation comes of age but we still have a way to go.

My final point concerns banks and their role in this emerging world of electronic commerce. Historically, banks, because of their central role in the payment systems, have been at the vanguard of electronic commerce by providing credit cards, debit cards, telephone bill paying and more recently PC-based home banking.

Judging from the amount of resources banks have recently invested in alternative delivery strategies, there is every reason to believe that they will continue to be a leading influencer.

However, their position is no longer guaranteed and I believe banks would be the first to admit that they no longer have a monopoly on the payments system. Just as banks found a way to enter new markets despite Glass-Steagall, so too have non-banks, like AT&T and Sears, successfully providing consumers with access to the payments system by issuing credit cards and thereby further eroding banks' traditional markets.

The recent telecommunications reform measure will bring on a whole new set of competitors, but I do not think this increased competition is necessarily a bad thing for banks or their customers.

The competitive landscape has changed and is changing. I believe that banks see these changes as an opportunity to redefine themselves, to create a new banking model and to take a leadership position that secures their central role in the payments system of the future.

I believe it is going to take the combined expertise and abilities of banks and technology companies alike to see electronic commerce become an actual reality rather than merely a virtual reality.

In conclusion, I would just like to commend the subcommittee for its foresight in anticipating the issues surrounding the increasing role of electronic commerce in the payments system, but I think it is important that we separate fact from fiction and reality from hyperbole.

I would just say briefly that I think the technology is available for all of these things to occur. We just need to be careful about how long we think it is going to take for some of this stuff to really take off and replace the current payment mechanism.

I look forward to participating in the dialogue that moves forward.

[The prepared statement of Mr. Coley Clark can be found on page 119 in the appendix.]

Chairman CASTLE. Thank you, Mr. Clark. We appreciate your comments and we will come back for some questions.

Jerome Page has been the General Counsel and Vice President for Business Development at the Metropolitan Transportation Authority Card Company since 1993. Previous to this, he was Deputy General Counsel for MTA with responsibilities for finance, real estate and corporate matters.

He became involved with MTA's automated fare collection project in 1989 and led the negotiations of the contract for the automated fare collection system for New York subway and bus systems. Since then, he has served in both the business and legal capacity with respect to MetroCard matters.

Mr. Page received a B.A. from Williams College and a J.D. and M.R.P. degree, Master's in Regional Planning, from the University of North Carolina at Chapel Hill. I suppose he could tell us jokes about the New York subway system or testify here. We will let him testify here.

STATEMENT OF JEROME PAGE, GENERAL COUNSEL AND VICE PRESIDENT FOR BUSINESS DEVELOPMENT, MTA CARD COMPANY

Mr. PAGE. Thank you, Mr. Chairman. It is an honor to be invited to appear before you. I am Jerome Page, General Counsel and Vice President, Business Development of MTA Card Company, which is a subsidiary of the New York Metropolitan Transportation Authority.

MTA is the largest transportation agency in the U.S. and through its subsidiaries and affiliates, operates the New York City subway and bus system, the Long Island Railroad and Metro-North commuter rail systems and nine intrastate tolled bridges and tunnels. These facilities serve some four million customers each work day.

We are at the beginning of a new generation of electronic cash initiatives whose scope and reach will extend to most areas of our economy. These new systems and processes have tremendous promise but they also raise novel and important policy issues.

Today I want to discuss some of these issues as they have arisen in the context of MTA's experiences in the planning and implementation of its stored value fare card network.

In 1994, MTA began operation of an automated fare collection system that is based on a plastic card with a magnetic stripe. The MetroCard, as it is called, is either swiped through a reader at subway stations or it is dipped into a fare box on buses, where the fare, in the form of electronic cash, is decremented.

By 1999, we anticipate in excess of 1.2 billion electronic fare collection transactions a year on the subway and bus properties. We also will process close to 200 million fare sales transactions a year.

MTA has made a considerable investment in this electronic cash network and we have been engaged in an active and ongoing effort to identify new and innovative ways to leverage this investment to achieve additional operating efficiencies and value.

For example, migration from magnetic stripe to Smart card technology may make it possible to cost-effectively implement a common region-wide transportation fare payment instrument that will link together all of the transit providers in our region.

We also believe that there is a real opportunity for governmental service providers such as the MTA, to save significant operating expenses, enhance customer convenience and possibly obtain an ongoing revenue stream by participating early on in the development of a regional multi-application stored value network.

Based on this premise, MTA began investigating the feasibility of using the MetroCard on the 4,000 public pay phones located within our facilities. This led us to consideration of the viability of a region-wide open system stored value network in which our card could be used in a multitude of low-dollar-amount, cash-based transactions, such as on taxis, parking meters and lots, vending machines, fast food restaurants, newsstands, laundromats, et cetera.

In basic policy terms, we felt we had two options. The first option was to stand on the sidelines and wait for the marketplace to evolve to a point where the stored value product was fully established before we committed to utilization of the new technologies and processes. This option was rejected because we felt that within the New York City region, MTA had the power to drive the evolution of the stored value business and we wanted to make sure that it evolved in a way that best served the interests of our stakeholders, namely our transit customers and our taxpayers.

The second option, which was the one we chose, was to initiate a competitive process to create a joint venture with private sector partners to develop a proprietary stored value network for the New York region.

It is contemplated that this electronic cash product will be placed on Smart cards that will be issued either directly by the joint venture, as well as on Smart cards issued by banks and other financial institutions that choose to participate.

Value would be loaded onto the card in a number of ways, such as at automated teller machines, at automated vending machines in the subway system, at retail merchant point-of-sale terminals, at home PCs or set-top boxes through some home banking networks, and even at pay phones. Value would then be decremented at any location that accepted the card as payment for goods or services, including transit properties.

From MTA's experience in implementing a closed fare collection system and our efforts to try to migrate this to an open multi-application network, we have been able to identify many of the factors that will drive the evolution of the stored value business.

In some cases, these factors aren't fully resolved and in other cases, they are not even fully understood. The major drivers of any

stored value business case include consumer and merchant behavior, the extent of the competition in particular markets, pricing vis-a-vis alternative payment options and the technological advancements.

In addition, there are a number of policy issues that must be addressed by the industry as well as the legislative and regulatory community. A number of these have already been raised today.

Take privacy as an example. Each MetroCard we sell has a unique serial number. The time and place of every entry into the transit system is actually logged against that serial number. Although MetroCards purchased with cash are anonymous, we intend to offer the option of purchasing and reloading value on Metrocards through debit and credit card transactions. We will then have the technological capability, but not the intention, to link a particular MetroCard to an individual.

The gravity of the private issue expands dramatically when the stored value card is multiple application. One of the important attributes of cash transactions is their anonymity.

Are consumers going to insist upon maintaining the absolute anonymity of stored value transactions and thus forego the convenience of loading value through means that link the card serial number and thus subsequent transactions to an individual?

Are consumers going to accept stored value products that physically reside on and are linked to their debit and credit cards?

Are stored value card issuers and networks going to want to, or be able to, convince customers that their privacy will be maintained even though there is a technological capability to tie electronic cash transactions to an individual?

Will legislation and regulation be proposed in this area?

I don't think anyone knows the answer to these questions but how the privacy issues are addressed will be an important component in defining the future dimensions of the stored value product.

A related issue that MTA has faced as we define the potential market for multi-application cards is that many merchants who exclusively handle low dollar amount cash transactions are not particularly enthusiastic about the idea of participating for the first time in a payments network that comes with a paper trail.

Another area that deserves attention is whether the benefits of advances in electronic cash and commerce initiatives will extend to all segments of our society.

This issue has a particular relevance in the context of MTA's efforts. Our ridership base is extremely diverse. Our research indicates that over 25 percent of our subway and bus customers don't have depository account relationships with financial institutions.

Obviously, to the extent that financial institutions focus their delivery of a stored value product on their deposit account customers, they have limited interest in serving this un-banked population.

We believe that in our negotiations with financial institutions, we have come up with solutions that meet MTA's governmental service obligations while also meeting our partners' need to operate a profitable business and maximize shareholders' value.

A final issue to bring to your attention is the importance of the role of governmental service providers in the development of new electronic cash and commerce initiatives.

In many cases, governmental service providers control high volume applications and large captive customer pools. Examples include the many different social service and entitlement programs that can be administered through electronic benefit transfer networks, the campus card programs at major State university systems, toll bridges, roads and tunnels, transit systems, airport facilities, municipal parking facilities, et cetera. The governmental entities in control of these functions will have to decide what role they will play as these new technologies and processes emerge.

In connection with our effort to establish a joint venture, MTA has been a firsthand observer of the financial services industry at its creative best as it addresses the complex issue of how to make money implementing stored value networks.

In the end, there needs to be a coherent value proposition to all the participants, including networks, issuers, merchants and the consumer. Innovation will best be served at this stage in the evolution of the stored value market by ensuring competition on a level playing field among all of the participants, including the banks, the processors, network integrators, technology providers and telecommunications companies.

It is a time for legislative and regulatory vigilance but the need for innovation appears to be premature.

In the context of governmental entities such as MTA, there are additional policy considerations that must be folded into the evaluation of participation in new electronic cash opportunities. It is important that governmental service providers not be passive, particularly in the markets where they represent a critical application. We have a significant contribution to make during this period of innovation and testing as the shape of the future of electronic cash is forged.

Thank you.

[The prepared statement of Mr. Jerome Page can be found on page 127 in the appendix.]

Chairman CASTLE. Thank you very much, Mr. Page. We will now go from transportation systems to universities and college systems.

Bill Norwood is the Executive Director of the Card Application Technology Center and is responsible for the development and implementation of the FSU card program at Florida State University.

Prior to this position, Mr. Norwood managed information systems development at Florida State University. Mr. Norwood received the National Second Place Award from the Nacubousx Foundation and the 1995 Davis Productivity Award with Al Gilligan. He is on the NACCU Board of Directors and the CUMREC Board of Directors. Don't ask me to explain all these acronyms.

Articles by Mr. Norwood have been published in Cause and Effect, ID Systems Magazine, On Campus Hospitality, Government Technology Magazine, the ACUTA News, USA Today, U.S. Banker and Florida Trend. Mr. Norwood has presented numerous papers at national conferences including CAUSE, CUMREC and AACRAO. He also acts as a national consultant for identification debit access card systems.

Mr. Norwood, we are delighted to have you here today.

STATEMENT OF BILL NORWOOD, EXECUTIVE DIRECTOR, CARD APPLICATION TECHNOLOGY CENTER, FLORIDA STATE UNIVERSITY

Mr. NORWOOD. Thank you. It is a real pleasure to be here today.

Florida State University is housed in Tallahassee, Florida, which happens to be the capital. We are comprised of about 30,000 students, 5,000 residential students, and a faculty-staff ratio of about 6,000.

During the last 6- to 7-year period, Florida State University has been pursuing the advanced development of cards in the I.D. arena and card application development to further expedite administrative services within the campus.

During that period of time, we have worked with many of the people who have been up here today speaking, which was kind of interesting to watch what was happening, but basically for the last 5 or 6 years, we have been trying to figure out how to make a university I.D. card, in a sense, to become an effective tool to administer services to the campus while at the same time reducing costs and optionally, if possible, create revenue streams for the institution.

Our card works in many different ways and one of the ways it works primarily today to facilitate those services is through a secured or protected banking relationship with a local financial institution.

We actually contract out the banking services of our card, issue it on the campus, and each student then has an account set up and whether they are banked or non-banked or whatever, it makes no difference to us. Every person has an account at no charge to them.

The University then uses that account to do electronic funds transfers, such as financial aid, student refunds, tuition payment, and so forth.

The reason for that is pretty basic. If we look at our institution today and determine how much time we actually spend dispersing funds, dealing with financial aid lines and for those of us who have ever been in those, we know how long that goes on.

Somebody told me the other day that the staff actually say that we spend 5 years of our lives standing in lines and I think four and a half of that must be in college.

A long story short, today in our college, we are able to take a student, have him register over the telephone, use the FSUCard to pay his tuition over the telephone and then tell the controller or bursar that they wish their financial aid to be dispersed electronically to their card as well. That means a student never stands in line anywhere and never has to do anything but hopefully go to class and pick up his books.

At that point in time, the funds may be dispersed electronically using the banking networks, using their normal transportation, ACH, and also putting it into their secured accounts and paying all of the necessary fees to do so in the process.

The beauty of this system is it is a win/win for both parties involved at that point. The bank has access to all of our cardholders, which we have now learned a new term in the last 5 years, "cardholders." We used to simply call them "students." Today they have become cardholders. Cardholders are a valuable commodity. They

have value as a whole. We use those and in terms ask banks to bid upon processing all of that information for us.

As an example, in years past, the FSUCard program has been processing anywhere from \$6 to \$10 million a year in what we will refer to as discretionary funds. That is, funds from mom and dad that may be deposited into the card. The student may spend them at about 250 local merchants or take it out in any of the ATMs worldwide, like in Honor or Plus.

Starting in the Fall of 1995, all of the pieces of this massive puzzle had finally started to come together. During 1995 and the first part of 1996, we had dispensed to the FSUCard approximately \$60 million. Those 30,000 students now have access to all of those funds through their card, no longer stand in lines and receive it at least 4 to 5 days quicker than they normally would have in the process.

The backside payoff to the institution in this particular case is roughly a \$300,000 savings in approximately five to seven positions within various offices that are no longer needed to do the functions that were being done before.

What we have tried to do here is partner with financial institutions, not compete with the financial institutions in this particular arena. There are other institutions that take a little different approach to the process and try to retain funds within the campus, lock them into prepaid programs and other things that do not allow them to take it out of the campus environment and be spent at other merchants.

When we figured out the financial aid piece, figured out how to tie it to the other banks, we elected to be open in that environment. We are totally in compliance with all banking rules and regulations, OCC and everybody else has obviously had a chance to look at us over the last couple of years due to several complaints that were filed, we have succeeded and passed all of those successfully.

The second part of our program is probably just as interesting as what we call on our campus the "junk stripe" or what we have heard referred to today as "stored value."

Since 1990, we have been exploring the concept of stored value and the replacement of cash within the campus environment. We have been using that cash replacement tool to replace all the coins in Coke machines, washers and dryers, laundries, copiers, snack machines and so forth.

The campus had a serious problem in handling money, the same as anyone else does in this real world today due to shrinkage, vandalism and other things that take place when you have cash in an environment.

Florida State University has successfully almost completed the conversion to a cashless environment within the campus. As an example, within the laundries today on our campus, 100 percent card usage, no coins at all. Within our vending and snack machine areas, we are at a 75 percent rate, including even people that come in from off-campus to buy as well.

Within the libraries, 94 percent of the copies made in the library today are all on the card. All of our departments now use cards to make copies within their departments.

Within that same scenario, to give you a gauge of the magnitude of this and in comparing to the FIs here, we are extremely small. But on our campus, we think it is fairly large.

In prepaid value, what we have referred to in the past as the junk stripe on our card, we will process this coming year \$900,000. That is in 6-cent transactions, 10-cent transactions, 50-cent transactions and 75-cent-type transactions. You can imagine, calculate that out and you come up with a number close to six million transactions occurring in our world, within our campus.

We sometimes in the past kind of laughed a little bit once we understood the Smart card arena and we listened to all the pilots that were going on with the Smart card world, and they were talking about they had 3,000 people using them at a particular center, corporate center, and they were doing 2,000 or 3,000 transactions. We for years have been grinding out on a day-to-day basis more transactions. The only difference was we were using existing mag stripe technology because of its cost and effectiveness at that point in time.

We are at a crossroads at our institution today. Many of the other universities within the country are at the same point we are. We are all trying to develop the banking relationships, to win the relationship with the bank, to win the cost savings advantages we can have working with them, as well as the potential revenue which we need to offset all of the funding and budget cuts we have faced in the last 3 to 5 years with our institutions.

Florida State University today has had no fraud within the system for the last 6 years. We have had no complaints even about losing a card with \$2, \$3, \$4 or \$5 on it in the last five years. It is an amazing world. I think the younger generation coming today is willing to accept many things that we as the older generation are not willing to do.

Florida State University made a major announcement on Monday. We have been working for almost 2 to 3 years within the Smart card arena ourselves, trying to figure out how to make the migration from the prepaid value stripe magnetic technology to the Smart card arena.

The reasons for doing that, in the past, everybody wanted to do it because of stored value. We could not justify a \$5 card with a chip on it for stored value use within our campus as compared to the existing 17 cent magnetic stripe technology we were using. We put it off.

We have recently made all the contacts. We have made all of the arrangements and today, Florida State University is completing the Alpha and Beta test sites for installing a single chip on our card that will contain a V-One security module, a stored value module, frequent shopper points within the module, as well as an open environment for track 1 and track 2 ABA data to be used in other applications around the campus for access, dorm access, and other things as well.

What that really means to us is that students will be able to sit at home, plug in this card into their laptop PC, dial into our Web server, which is secured by V-One and a firewall, encrypt the data between the two devices so that no one can intercept grades or fi-

nancial information going back and forth between those two devices.

If that happens, we have carried security actually out to the ultimate level. At that point, not only can you guarantee that the user on the other end is who they should be, we can also guarantee that no one else can intercept the data going between those two devices.

This will ultimately allow us to do more things within the stored value world. It will allow us to use, as an example, Northern Telecommunications pay phones, their new millennium phones, to actually load value onto these cards because we can encrypt data transmissions both ways and secure the cardholder at the same time.

Florida State University has been very fortunate to get as far as we have in the program in the last 5 or 6 years. We appreciate all of the cooperation the FIs have given us in the process. We have learned a lot about the rules and the procedures that must be followed in this arena to ensure the integrity of all these systems.

We certainly respect those. We in no way wish to intercede and mess those up for anybody, but we also need to do certain things with our environment.

We appreciate all of the consideration given in the past, the special ruling consideration, especially in regard to financial aid distribution. We actually made three trips for our institution to Washington, reviewed the forms and had the financial aid crew sign off on the changes we were making in order to disperse financial aid the way we do today.

It has been very successful. Our students enjoy it and even our financial partners are enjoying it today. Thank you.

[The prepared statement of Mr. Bill Norwood can be found on page 133 in the appendix.]

Chairman CASTLE. Thank you, Mr. Norwood. That is very interesting. We will come back to you in a few minutes.

James Brown has been the Director of the Center for Consumer Affairs at the University of Wisconsin, Milwaukee since 1977, where he is also an Associate Professor.

Prior to joining the University, he was a staff attorney with Milwaukee Legal Services, concentrating on consumer law matters.

Mr. Brown holds a fellowship with the American Bar Association's Section of Business Law. He helped establish and chaired for 5 years the Consumer Advisory Panel for Ameritech.

Mr. Brown has testified regarding a variety of consumer-related matters before both State and national organizations and legislatures. He serves or has served on a variety of professional, civic, legislative, advisory and corporate boards. These include the Consumer Federation of America, the Consumer Advisory Council to the Board of Governors of the Federal Reserve System, the Electronic Funds Transfer Association and National Consumers League, among others. He has been President of the Wisconsin Consumers League since 1983.

Mr. Brown received a B.A. in physics from Princeton University and a J.D. from the University of Wisconsin's Law School.

Since you are self-characterized as a consumer advocate, you may not treat this as a compliment, but a banker I spoke to yesterday said that you were very fair. A lot of consumer advocates don't

like to be described in that way. He had very nice things to say about you.

I think you are a very important person to present the consumers' views of where we may be going in this area. We look forward to your testimony.

**STATEMENT OF JIM BROWN, DIRECTOR, CENTER FOR
CONSUMER AFFAIRS AT THE UNIVERSITY OF WISCONSIN**

Mr. BROWN. A cynic might wonder whose reputation is damaged more.

Thank you, Mr. Chairman. It is a pleasure to be here. I have been associated with consumers and electronic funds transfers for over 20 years. I was originally involved when Wisconsin developed what became the first consumer protection regulations in the United States, which will have been in effect 20 years next December.

I also worked fairly extensively with then-Senator Proxmire's staff when he initiated the legislation that ultimately became the Electronic Funds Transfer Act, again, more years ago than perhaps I care to admit.

I will attempt to offer a few observations on my view of the end-consumers' attitudes toward some of the issues that your committee is wrestling with and I guess in the interest of full consumer disclosure, I would indicate that I am a fan of EFT generally, albeit a cautious one.

I think in large part that may be a fair characterization of the attitudes of the majority of consumers with regard to these various payment and value stored techniques.

It seems to me there are a number of factors that any entity in your position needs to consider and appreciate in assessing these questions. Of course, they need to understand consumer expectations, needs, and in fact, desires, for storing and transferring value. They need to appreciate the evolving goals and nature of financial institutions and how that plays out in terms of their pricing practices and in terms of the routinization of their delivery means.

It seems to me that you need to appreciate some of the implications of the increasing consolidation occurring within the financial services industry, the participation, as several of the previous speakers have mentioned or alluded to, of what I call newly emerging offers, and finally, I think you need to never lose sight of the inherent tensions in the implications of a marriage of applied technologies.

These technologies enable new combinations of electronic data processing and telecommunications, which means we can move value around ever more efficiently, ever more cost-effectively, over greater distances.

At the same time, this marriage of these technologies is enhancing or furthering what I call the disconnectedness of consumers from their money and the anxiety that quite naturally engenders.

As I mentioned, we are really talking about new combinations of the marriage of these two technologies, data processing and telecommunications. Really this is the same marriage of technologies that gave rise to the Electronic Funds Transfer Act in the 1970's. It is simply that there are some new combinations and some new, more powerful and ever more cost-effective ways of providing them.

Frankly, we are looking at the lack of clarity or in some instances, even the lack of existence of applicable rules governing basic kinds of consumer considerations in this area. That is not to say that it is bad or good, just nobody is quite sure what all the rules are. There are more questions than answers obviously.

I think it is important to recall that the primary purpose laid out in the Electronic Funds Transfer Act is the provision of individual consumer rights. Ultimately, all these technologies are not ends in and of themselves. They are means to ends. They are means to the end of allowing consumers to function as consumers, to transfer a value, to store value, to acquire the goods and services and make the payments they wish. It is important never to lose sight of that.

The Federal Act envisions, I think quite wisely, multiple and evolving combinations of these technologies. As such, the Fed of course has been given ongoing rulemaking authority. I think that suggests quite compellingly that these different combinations must be addressed individually.

Stored value cards raise a whole series of consumer issues that are different than using transactions through telephone payments or where the consumer initiates that directly. You have to carefully examine the individual architecture of each transaction and it seems to me come to appropriate rules accordingly.

One concern, or one issue that it seems to me you may need to revisit is whether or not the term "account" as that term is used in the EFT Act, is sufficient. This is a crucial term in the Act in invoking the coverage or non-coverage of the Act; it is key whether or not that has the same meaning in light of the various kinds of technological marriages we are talking about today.

I am not sure I can give you a clear answer. It may be a definition that was adequate in the 1970's and it may not be now.

I guess I would also caution that despite the tendency of many people to do so, there is little long-term benefit in likening these newly emerging formats to existing payment systems, whether or not a particular usage is more like cash or debit cards and the traditional ATM form or credit cards. Frankly, that is not going to be very satisfying as a long term solution.

There are some similarities. There are some dissimilarities. This again I think underscores the need for individual responses.

The key, however, of course, is to have rules. These rules will serve two critical functions. One, provide reassurance that consumers psychologically need with regard to their value and two, and I think equally important, that these rules will provide the predictability that businesses need to operate, to deal with 200 million consumers or more in the United States today.

The predictability of an outcome is oftentimes as important as what that outcome is, it seems to me, from the standpoint of a business.

Money then to consumers is a different animal. It enables consumers in fact to be consumers. As such, consumers view money differently than they view other physical things and they demand more from it and they demand primarily reassurance, reassurance with regard to a number of factors, primarily the reliability of the issuer or the reliability that in fact the money will be able to allow them to be consumers when they choose to be.

Money is becoming ever less tangible. While this has some transference values, it poses greater difficulties in providing the reassurance to consumers that they demand. To make a payment by a simple keystroke is perhaps the ultimate act of payment. It is not the same as my handing a clerk at a McDonald's a \$5 bill where there is a mutual recognition of what that means.

I've sent that blip out into who knows where. That creates a psychological unease that consumers need to have addressed. I think Mr. Norwood is correct, perhaps as consumers younger than myself and Mr. Norwood come along, perhaps their level of uncertainty is less than ours. Again, I guess I am just cautious by nature.

It seems to me that what consumers ultimately want is they want to perceive that they in fact are in control of the ways in which they transfer value. They want to have options as to the forms their value transfers would take. They do not want to be limited to only paying by one means, whether it is using a token or a Smart card. They want to be able to control access to information that may be specific and attributable to them as individuals.

There is a *per se* value that consumers apply to the privacy of that information, regardless of whether it can or cannot be demonstrated that it will ultimately come back and cost them money or result in measurable damage.

They want to be sure that they are insulated in part or completely from the consequences of incorrect or unauthorized transactions. In other words, they want reassurance before—when they are contemplating a transaction, during—while they are performing it, and afterwards—when they need to question it or undo it.

A couple of quick points and I will conclude. I mentioned the concentration that is occurring within the financial services industry. It seems to me this has some real implications for consumers because to the extent that concentration occurs, you are going to have more mechanization, more routinization of financial services.

This is going to make it ever more difficult for an individual to deal with a system when they have a question, a complaint, a problem that needs to get resolved. It is getting harder and harder to actually talk to a live body to deal with a problem or even a question that occurs.

This is not because of some malevolence in the system, it is simply driven by economies of scale that occur as a natural result of this concentration.

Similarly, with more concentration, with more interlinkages, you are going to see more and more explicit fees. The surcharging right now is yet another example. Are consumers going to pay in several specific increments for what to them is after all just one payment? I want to pay Land's End to buy a tee shirt, for example. Do I want to pay a little clip here, a little clip there, a little clip in the third place? Am I going to be proverbially nickel and dimed to death?

I would recommend for your consideration a liability allocation for transactions that go bad a couple of notions. First, it seems to me that you put the burdens, i.e. the liability, on the parties who are in the best position to anticipate those problems and design systems so as to prevent them, rather than to try and provide some remediation afterwards. That gives the parties the incentive to preclude the problems from occurring in the first place.

Second, recognize that there are many instances already in the law where it is not cost-effective to attempt to resolve disputes or concerns based on simple, appealing as they may be, notions of negligence. Below a certain point, it doesn't make sense for an institution or a consumer to argue over who caused the loss of a \$10 item or a \$20 item. It makes no sense to impose a system that is going to incur a \$100 cost, to argue over what went wrong on a \$10 transfer.

There is precedent for that in the credit card rule that has been around for nearly 30 years.

A point I would make on some of the sociological aspects, I've done some research for the TYME Network in Wisconsin, on whose board I have sat for about 15 years, that suggests that many of my former legal services clients, the less traditionally served, less affluent populations, really value the anonymity that comes from some of these technologies, that there is a real benefit of not having to go into an institution.

As a banker friend of mine put it: He saw people that were plate glass shy. They walk into a bank that looks like this hearing room and they are intimidated. The fact is they can go to a machine and it doesn't care how they are dressed. It doesn't care what the color of their skin is. It is simply a service that treats them on a purely egalitarian nature. I have some data that suggests those clientele may particularly value this.

The problem of course becomes: Is this a clientele—is this a population—that the industry, not given any other incentives to serve, that they will focus on, or will they continue to focus on upper income, affluent consumers?

This doesn't suggest that existing legal models are necessarily right for these emerging technologies. It does suggest that consumers need and deserve protections and reassurance regardless of how their value is going to be transferred. New models balancing the goal of encouraging such new value transfer systems where they can benefit consumers while still protecting consumers from unreasonable risks is crucial.

The existing EFT Act envisioned that. It was good policy, it seems to me, when enacted in 1978. It remains good policy today.

Thank you for the opportunity to appear before your subcommittee.

[The prepared statement of Mr. James Brown can be found on page 140 in the appendix.]

Chairman CASTLE. Thank you, Mr. Brown.

If I could just sort of come back to your original statement about being cautious, I think your testimony underlined that. I think I put myself in the same category.

One thing I thought was interesting is you are suggesting that some of those who are non-banked right now may actually look upon this as an advantage, as opposed to a disadvantage, in certain instances.

I am also concerned, are there categories of our population, be they poor or otherwise, you would be more concerned about in terms of this technology, in terms of lesser services than they receive today?

Mr. BROWN. I would be concerned in the sense of: Are there structures in place that will give the providers of this technology incentives to serve these populations? Most of the people in this room are the kind of consumers that every provider of payment services wants to deal with.

My legal services' clientele weren't the kind of clients that traditional repositories would serve. In the inner cities across the country, you see alternative mechanisms. You see rent-to-own, check cashing, that have evolved as the traditional industry has withdrawn from those communities.

In one sense, the market is working there, but in the other sense, these alternatives tend to be much more expensive than you and I would pay for comparable services.

As I indicated, when we did some survey research in Wisconsin, we found that lower income consumers valued the anonymity that came with these transactions. It seems to me you have to separate out from that how do you assure that these services are going to be made available to those populations.

There are a number of mechanisms. I don't want to take up all the time, but there are a number of potential ways to give incentives to providers to serve some of these populations. My experience is that these populations tend to flock to them when available. They see the benefits. They are consumers. They will react to a better product at a better price when it becomes available.

Chairman CASTLE. I think it will be a very constructive role for you and other consumer-interested members of our society to make sure that target is always being watched as this progresses. I think it is getting ready to progress faster than it ever has before and I would want to make sure that the rising tide is including everybody.

I am encouraged by what you have to say about that, however.

Mr. Clark, you had a little bit of a different slant than some of the others, particularly in the first panel, who basically thrust us all into 100 percent electronic banking in the next few years.

My impression from your comments was that it may go a little more slowly. I think you said 1 percent of individuals are in home banking at this point and while we hear all these things, sometimes I wonder how fast it is going to go as well.

Mr. Norwood testified that here is basically a city of 25,000 people, inside Tallahassee at Florida State, all of whom are not only plugged into a card, but a card which is going to expand how you use it to get your Coca-Cola, to make your telephone call, to get your books. I have some questions to him about loans and things like that. A lot of money is going into here all of a sudden which is sort of interesting.

Are those consistent? I guess one of the things I am interested in is the speed. Mr. Brown actually sort of opened my eyes as to some of the language on definitions of electronic fund transfer and that kind of thing. I didn't realize it goes back into the 1970's legislatively. This has existed for some time. I knew that. We have actually legislated in this area somewhat before.

I am sort of getting the impression we are on the verge of a much bigger movement into this area. I don't know if you agree or disagree with that, but I would be interested in your comments on it.

Mr. CLARK. I think clearly technology is available and in sort of a closed society like Florida State where everybody is younger, they are more capable and more interested and more flexible and they are pretty much being forced to use that system there. I may be overstating that, and if I am, I apologize.

If you look at the average American, I just say that although this is available and we are going to see advancements, no question about it, but what I think I said was before on-line commerce becomes sort of the primary method for consumer banking, it is going to take a while before it replaces the sorts of things that we are doing right now.

I think Mr. Brown made the point that people want choices and in sort of every day America, people want choices. It is just going to take a while before we get there. I think the banking industry is providing a number of alternatives today and there are a lot of investments being made both by banks and by technology companies like EDS to be sure that we are ready and that we do have the sort of technology available when the time comes. I still think it will be a while before it is ubiquitous.

Chairman CASTLE. Let me go to Mr. Norwood, and I am not trying to provoke an argument, nor do I reach any conclusions. I am just trying to get the facts.

You mentioned that other universities and colleges are doing similar type things, they may not be as advanced. If it works at one, it will be copied by others quickly. It is a fairly closed community.

All of a sudden you have a fairly substantial part of our young population who is sort of used to doing this. I was probably slow to go to an automatic teller machine, once I realized I didn't have to wait in line. I never went back to a teller. I wonder if these young people coming out of college are going to be real happy about going back to normal transactions. I am just thinking out loud.

Would you agree with that? How fast do you think all this change may come about?

Mr. NORWOOD. From a generational standpoint, there is a major difference in the way they look at it. As an example, our controller's office, when we did our first \$15 million transfer in the Fall on a Sunday, the controller's office required us to put on hand for a run on the branch bank that was on the campus, \$10 million. That branch had never seen more than \$100,000. We had to have on call \$10 million. We have several banks in town backing us up.

It required us to have buses to take the students to the other ATMs and the other branches within the cities where they could withdraw their funds because they knew, as students do, they run, grab their money and go away.

They didn't. Everybody was literally floored. We had 20 to 30 cycling in and out of the branch all day. They beat us at our own game and we didn't know it.

Sunday afternoon, Sunday night and Monday morning, the ATMs all over town were heavily hit. They were looking at the ATM to see if their funds were in the account. When they saw the funds in the account, they went home. They didn't care.

It was literally a no-show. We didn't know they would do that. We thought they would come into the branch, check on balances

and then go away. They didn't even do that. They went to the ATM.

The younger generation that is in college today, when they graduate, I will tell you now, they will demand these services. They won't ask for them. They will demand those kinds of services. I think that is great.

We do not force our students. We learned a lot in going through your laws, rules and regulations, if I require that all of our financial aid is dispersed electronically to these cards, then the student gets to pick all of the accounts where it goes. You can imagine having 30,000 accounts scattered throughout the United States where you are EFTing your financial aid to and trying to determine whether it is still open, closed, or whatever else is going on.

As everyone said earlier, 20 to 30 percent of our population minimally is non-banked. We have created the bank for them. We have put the funds there. We allow them the option to go stand in line, receive their funds within the normal processing cycle, or to elect to have it transferred.

We give them reasons to do what we want them to do.

Chairman CASTLE. Let me ask just one followup question. Maybe I didn't understand this. It seems to me that at some point, I have this sort of mental picture that at some point you transfer all this money into these student accounts, and if I was a student, the students I went to school with, you know, we would probably be over there with the cards withdrawing it as fast as we could and doing something else with it than going to school or whatever.

I worry about that a little bit. What access does a student have? Do you actually put the loans into their accounts and then they pay their bills directly? Do you have any lien against that? Do they have the ability to go to a Plus machine and start pumping out dollars in cash?

What security measures have you put in place? College students are bright and they are notorious for sort of, frankly, beating systems every now and then.

Mr. NORWOOD. They are very good at beating our system. They have done it every time we have put up another system. In this particular case, we depended very heavily on the banking system and what they had established already. We did not reinvent that wheel. We simply used the wheel, maybe twisted it slightly, to do what we wanted to do.

We used what we call in that card there, what the industry will refer to as a "private label card," so we could control the environment, we control the merchant. We don't let our card today be used at a bar, liquor store or lounge. Very simply, we can control that environment. We did that.

The bottom line is the students themselves today and the funds disbursement, to put it into clarification, if you are receiving \$5,000 in aid, in the old system, you would walk into the cashier's office and we would write you a check for \$5,000. Then we would require you to endorse that check so we may take out your accounts receivable and your tuition.

Some of that may be last term debt, which is contrary to some of the rules and regulations within financial aid, being honest about it. Every one of us do it, so we can sit here and say that.

In our system today, what we do is the student agrees ahead of time to pay the fees and whatever else out of his account, if he wants it electronically transferred. We transfer the \$5,000 to the FSUCard account to transaction, one for \$5,000, which gives him a record that it was posted to his personal account and we know he received the funds. The second transaction then is taking all that money back out of there, the \$2,500 or \$2,200.

If you wonder if they have money left over in the system, it is absolutely true they do. A \$15 million transfer today to these students, they have \$10 million left. That is about the ratio. It is about 60 to 70 percent that is left for discretionary spending.

It is no different than giving them a check that they have to go try and cash somewhere and pay somebody a large number or whatever they have to do or lose it in the process. This is much more secure. We have had less robberies and everything else since we have started the systems we are doing.

Chairman CASTLE. Thank you. Mr. Page, as I understand it, you have a closed system at MTA in terms of what you do. You also mentioned the possibility of going to a more open-type system.

Would you want to have a card or something which could do more than just do the transportation methodologies around New York, or would you want other cards to be able to come in and do the transportation as well? Am I misstating what you said altogether?

Mr. PAGE. You are right on point. That really was the question we faced 3 years ago. We were on the road to a closed fare collection system. We had a magnetic card that performs fare collection in a very cost-effective way.

Given the size of our system, it is a long roll-out. We are not going to be complete in the subway system until the middle of 1997.

Because of the client base we have, which will be somewhere in the subway system on the order of three million people who at some point in time, will use a card. The current thinking is that we are going to turn off tokens. In New York City, you can use a token to get on a subway as well as a Metrocard.

When you turn off tokens, those three million people, to get on the subway system, are going to have to have a Metrocard. What we were looking at was ways from the consumer side to make life more convenient by adding additional functionality so that you could use this card on other transportation networks and then expand that, use it on a taxi cab, or use it at a fast food restaurant and so on.

The idea was that rather than having to carry several stored value cards, you could carry one stored value card.

To answer your question, we then looked at how do you get there, the choices were: Do you wait until the Visas, Mastercards and EPSs and others, Mondexs, shake out and see where the industry is and then put, like you see on a number of ATM machines, a number of decals on our turnstiles that say these are accepted here, or do we take a proactive approach and try to structure a stored value system where we took a critical role and started an open network, but on a regional basis, where we participated actually in the venture that was a card issuer and we are pursuing that

latter approach in negotiations with financial institutions to joint venture with the people who know how to do it best.

Chairman CASTLE. My final question is of sort of a personal nature. In your bridges and tunnels in and out of New York, where are we in the technology of reading a moving car? Having waited at practically every bridge and every stop on the New Jersey Turnpike, I would love to see something.

Mr. PAGE. There is a multi-authority consortium that is implementing what is called the EZ pass, which is a radio transponder-based toll collection tag. It is being implemented on the bridges and tunnels that we operate. It has been implemented on the New York State Thruway at certain of their toll collection facilities. Ultimately, it will be integrated. I am not as expert on this. I think from Connecticut through to Maryland, you will be able to travel with a single tag and have tolls decremented. They are working out the back office integration so you can have a single account to do that.

On our facilities, we currently require people to stop. The New York State Thruway allows you to roll through at 5 m.p.h. The technology is there, I believe, to be able to have the interface, up to 50 or 60 m.p.h., but there are safety issues and they are going slowly.

Mr. CLARK. If I could just make one comment. There is a system, as you point out, the technology is there. There are parts of the country where it is available. You can go through at 65 m.p.h. and it will pick it up. I can personally testify to that at this point—or 55.

Chairman CASTLE. Yes, 65 is legal in some places now. You can say that, Mr. Clark.

Mr. BROWN. One brief comment. I think there is a point, and it is fortunate that you just posed the two questions that you did, because they are related. To the extent that the card becomes more attractive because additional functionalities are added to it, that has been a very common way of trying to make the cards more attractive. Frankly, that is a good thing when it works right.

The concern remains, and it seems to me the example of the tollway system that is automated is a pertinent one, that you still have to have the alternative. If I am at the end of the line out here in Vienna at 12:00 at night, there better be a system that I can get in if somehow that card doesn't have enough value on it or I can't convert cash to it or the system is down or whatever, I don't want to hear about how many functionalities I have if I can't get on the subway to get the last train into town.

Similarly, just as you see these experiments where you can go through the toll barrier at 60 m.p.h. and it is automatically decremented, there are still lanes where you can pay in cash if that is what is necessary.

You have to have these alternatives just as a backup. It is not foolproof.

Chairman CASTLE. Even a changing alternative, like you might have one lane with the cards and eventually you will have six.

Mr. BROWN. Precisely.

Chairman CASTLE. Mr. Flake.

Mr. FLAKE. Thank you very much, Mr. Chairman.

I think Mr. Clark is ready to sell Mr. Page a system that he can use at the MTA in New York.

The first question I have, Mr. Page, in New York, as you know, and I suspect it is the same in some other places, if the system you designed is one that is going to be replicable for other municipalities, the concern is how do we assure that this system is not only workable within the MTA structure in terms of subways and buses, but realizing that in many of your outer boroughs, you are actually contracting out a level of service to other bus companies and of course you know that in many communities now you have a van market. I am sure they are not covered.

Those other ancillary kind of support transportation systems that you actually contract with, are they under the umbrella of this technological advancement?

Mr. PAGE. Congressman, as you are well aware, there are a number of interrelated transportation agencies in the New York area. There are nine bus services that are subsidized by the City of New York, all of which will be getting fare boxes that will accept the Metrocard. Were we to migrate to an additional card system, they would be able to utilize that.

We have been talking to the Port Authority, which would be interstate, it provides the PATH service, about ways for them to install equipment that would become compatible.

We have not gone beyond that at this point in time in terms of private vans and others. That is something as the system gets installed that will be looked at. One of the questions is the cost effectiveness. They are reasonably expensive readers and equipment.

Mr. FLAKE. Does this structure allow for cost savings or is it a matter of efficiency primarily?

Mr. PAGE. It is a combination of cost savings. It also gives you, within the transit environment itself, the ability to do a lot of different fare structures, the ability to do time-based passes where you issue a monthly pass and you would be able to have unlimited rides or some maximum number of rides. It would give you the ability to do peak and off-peak fares. It gives you the ability to do subway-to-bus transfers, bus-to-subway transfers, things that we cannot currently do with the token.

Some of those fare policy initiatives are being contemplated and others are not, depending on the question of subsidy.

Mr. FLAKE. Mr. Norwood, as a former college dean and seeing all of the problems of trying to function in a student environment, with all the attitudes and changes that occur, one of the things I am interested in is how do you design a system, where you said before that traditionally if you gave a student a financial aid check, they came in and signed the check, the university got its payment and then the student, if there was cash left over, they may have gotten it, or they may have been allowed to allow that money to remain in an account for the next semester for books and whatever, but how do you guarantee that once you have put the money into the system, that student in fact is going to use the money for its intent and the university is not going to be left basically holding the bag for it? The University of Delaware needs to know the answer to that.

Mr. NORWOOD. In the simplest terms, we get our funds up front. The way the monies are advanced to the students today is on a term-by-term basis. If you are a first-time-in-college student, you actually can't get your money up front at all. You have to wait the first 30 days of the term to draw your funds out by Federal rule. It is nothing to do with us.

We have had absolutely no problems to date with students complaining. We think we are doing it right. It is actually like their own world of banks. The only difference is this is a true debit card the way we use it. We do not allow them to have checks on the account so they don't ever overdraw their account. Every transaction is electronically checked in the bank side.

In the prepaid value side, that world of stored value for the Coke machines and snack machines is a separate stripe on the card and that is exactly as his is, it contains the value within the stripe. When they swipe it or use it in a machine, it takes value off. We set the value they can put on that stripe at \$50, obviously to comply with some banking rules and regulations that were out there a long time ago that you set for obvious reasons, and we decided to use those as well.

Mr. FLAKE. The student treats this as a depository?

Mr. NORWOOD. Absolutely.

Mr. FLAKE. They put the money in?

Mr. NORWOOD. Absolutely, and they add money all the time. Parents are transferring funds to the account. It is set up to be a full functional account just like anybody else's except there is no minimum balance, no monthly service fees. They get the itemized statements every month. They can be in Florence or London and use it at the Honor ATM to withdraw cash with their FSUCard, which is rather unique.

Mr. FLAKE. One of the advantages of banks on the current systems is that, for instance, my wife does not allow my daughter, who is in Georgia, to have her own banking account. She gets the statements at home. You can manipulate the system to meet whatever kinds of adjustments and needs there are.

Mr. NORWOOD. You can have the statement sent wherever you wish. Those are your options. It is your account. It is simply sponsored by Florida State University. In other words, it is your personal cardholder account.

Mr. FLAKE. You do \$90,000 in small change items?

Mr. NORWOOD. \$900,000.

Mr. FLAKE. Does the University benefit financially from that?

Mr. NORWOOD. Yes, we get rid of all the funds within our campus that are typically stored in the cash-to-card machines—excuse me—the change mechanisms and all those. Vandalism across our campus within our Coke machines and vending machines is down about 40 percent at this point. The laundries have vandalism no more because they are totally card, and the actual usage in those areas is up.

There have been several comments made here and I would like to reference them just briefly for one moment and take about 30 seconds.

We have desperately for 5 years worked with EPS and everybody else trying to develop and understand the chip card technology and

asking one question all the time, and it is the same problem he will run into with his open system in a sense, and the same one we are going to butt heads with in a couple of years, and that is what we refer to as public key.

The reason the ATM world works today is they have all agreed on public keys. We have had meetings with Visa and with Mastercard and with the financial institutions.

When we have those meetings, every time we are told the only chip that will be on a card that they can use is a chip issued by the financial institution. That doesn't allow me to add the application capabilities to the chip I need for security access control on my campus and the V-One's and the other things. That is not a workable agreement for me.

We have a problem that is going to hit down the road as we build our base, he builds his base, and they start to come out with their cards on Mastercard and Visa. We are all going to run together. It will be the ATM world of 25 years ago when everybody had their own individual machines, and then there were smaller networks and finally everything worked.

It takes a while and we will go through the same thing.

Mr. FLAKE. We have a vote. Are these accounts insured, FDIC insured?

Mr. NORWOOD. They are bank, 100 percent, not stored value, let me rephrase that. The bank account that the student's financial aid is in is at a financial institution. It is their accounts, their normal banking rules and policies. We contract all that work out.

Mr. FLAKE. I ask unanimous consent if there are other questions, and I think my staff may have some, that they just be submitted in writing, Mr. Chairman, so we may go vote.

Chairman CASTLE. That consent is obviously granted. That may be true of other Members who may wish to submit questions to you, if you could answer them. This may have provoked some questions, too.

Let me very quickly thank you very much for being here. I thank everybody for participating. We hope you enjoyed it and got something out of it as well. We appreciate it. Thank you.

[Whereupon, at 1:10 p.m., the hearing was recessed, to reconvene at the call of the Chair.]

A P P E N D I X

March 7, 1996

PREPARED OPENING STATEMENT OF CHAIRMAN CASTLE
FUTURE OF MONEY III HEARING

The subcommittee will come to order. Welcome to the House Banking and Financial Services Committee, Subcommittee on Domestic and International Monetary Policy Third Hearing on the Future of Money. I would like to welcome two new members to the subcommittee. Congressman Paul Kanjorski of Pennsylvania and Congresswoman Nydia Velazquez of New York - welcome aboard, we are glad to have you join us.

The purpose of these series of hearings is not to rush to pass legislation regulating these new technologies in electronic money, on-line banking, etc., but to focus the attention of the industry, Congress, the Administration, and the regulators on the potential of these new financial technologies, as well as the possible pitfalls. This analysis and discussion I hope will lead to uniform industry standards and a better understanding by government and industry of the entire picture of the future of money. Perhaps most important, I hope we can help provide the American public with information on how these new technologies and products may give them more financial freedom and choices in purchasing goods and services and doing their normal banking and financial business.

We have now followed this subject from our first hearing last July with the entrepreneurs who are behind the new technologies. In October, we heard from potential regulators and law enforcement authorities regarding their varying levels of interest and concern about these systems. We are now about to get the latest insights into a variety of banking strategies for using or reacting to these innovations. And in May we will learn how these new forms of electronic money stream across international borders and provide a mechanism for greatly increased world-wide commerce.

Over the past two weeks I have discussed the future of money with two different groups. In Delaware, on Friday, February 23rd, we held a Roundtable meeting with the Delaware Banking Association and there was very active discussion about what the future technology means to our local financial services industry. This past Monday I had the opportunity to address a group that was assembled at least partly in response to these hearings. That was the first meeting of the Electronic Commerce Forum, an eclectic cross-industry group whose only common thread is a belief that these new technologies offer great opportunities for future business.

They came together to discuss setting a private sector agenda to solve as many common problems as possible before turning to the public sector for relief. Apparently, nothing I said discouraged them because they will meet again next month. Today we will hear about strategies used by both banks and nonbanks faced with challenges and opportunities offered by the evolving technology of electronic money. In addition, we will hear about how these transaction technologies could affect consumers and how these concerns in turn could create demands for additional consumer protections.

The first panel will feature:

- a. Dudley Nigg, Wells Fargo (Community Bankers) who will demonstrate the "Mondex" system of stored value card that Wells is a licensee for in the U.S. This is the British development by Nat West that permits anonymous transfers of electronic cash

from cards to third parties and between cards using an "electronic wallet".

b. Frank Wobst, Chairman and CEO of Huntington Bancshares (head of Bankers Roundtable Technology Task Force) represents one of the most innovative regional banks and will describe how his operation is planning to implement the latest technology.

c. Richard K. Wilhide, a Wilmington Trust Vice President will describe how this leading fiduciary bank is planning to pursue their interest in stored value systems.

d. Michael Karlin, President of Security First Network Bank, will demonstrate how this FDIC insured institution operates as a "virtual" bank with a presence almost exclusively on the Internet.

The second panel includes:

a. Coley Clark, Electronic Data Systems VP for the Financial Industry. They are ubiquitous in the financial services industry, providing support services to banks and nonbanks alike and they are major participants in an international network known as "The Interbank On-line System" (IBOS) with 1st Union in the U.S. and the Bank of Scotland and Banco Santander in Europe.

b. Jerome Page is the General Counsel and VP for Development of the NY Metropolitan Transit Authority (MTA) Card Company. They are in association with Chemical/Chase in issuing smart cards to the two million daily riders of the transit system. These cards are expected to be accepted in other NYC business as well.

c. Billy Norwood, Executive Director of Florida State University's Card Application Technology Center, will describe how his multifunctional stored value card will be used in Tallahassee with a number of partnerships to provide a broad spectrum of services to FSU students without the direct supervision of a bank. He is also consulting with the state of Florida about their plans for similar initiatives.

d. Finally, Jim Brown, Director of the University of Wisconsin, Center for Consumer Affairs will discuss some of the key consumer issues that will no doubt provide fodder for future inquiries and hearings into this area.

We look forward to their testimony in our effort to draw as complete a picture as possible of the impact of new technology on our banking system.

STATEMENT OF FLOYD H. FLAKE
RANKING MEMBER
SUBCOMMITTEE ON DOMESTIC AND INTERNATIONAL MONETARY POLICY
MARCH 7, 1996

THE FUTURE OF MONEY: PART III

Electronic banking and its ramifications on not only the national but global economy are real issues of importance to the Banking Committee, its members and our constituents. This statement will outline some of the current technology that facilitates electronic banking and commerce, and also some of the security and regulatory problems these new technologies might pose.

I will submit a more detailed statement for the record, but I will initially state that Democrats will be especially concerned about the affects of new technology on the consumer, and the poor segments of society who are often classified as the "UNBANKED." To often, in communities like the one I represent there is a dearth of financial services. What is left are nonbanks which, in some instances, unfairly take advantage this lack of services. I am pleased that all of our witnesses today will address this topic with consumer issues in mind, and I commend Jerome Page from the Metropolitan Transportation Authority for commenting on this issue. I also will welcome the testimony of Jim Brown form the Center of Consumer Affairs at the University of Wisconsin.

Democrats will also have concerns about privacy issues. The new technology being developed has the capability to track, among other things, consumer spending habits. The result is that the anonymity that some consumers enjoy with cash could disappear, and Congress must ask what sort of legislative or regulatory regime will govern privacy as we move to new payment products.

In closing, let me state that I am excited about new payment products. Democrats, while concerned about privacy, safety and soundness, and the universal availability of this new technology, do see advantages of electronic payment methods. The prospect of less expensive entitlement payments, which are safer for the recipient and issuing agencies, is of great interest to those of us who seek changes in social programs.

Stored Value Cards

According to Visa, bank cards are now the third most important means of consumer payment after cash and checks. Annually, they account for about \$1 trillion of purchases worldwide, \$463.1 billion of which are in the United States. Corporations, like Visa and Mobil, are introducing Stored Value Cards, hoping that this new technology will be the successor of the ATM card. These cards have more appeal because banks estimate that four percent of the value of deposited cash is eaten up in handling costs.

A stored value card will operate like an electronic "purse" or "wallet" that will take the place of coins and cash for small purchases. These will be wallet-size cards embedded with rechargeable microchips in which the consumer will be able to "reload" the micro-chip and control the amount of value stored in the card's memory. As opposed to the pre-paid phone cards that are currently popular here and in places as far away as Malaysia, the value information is stored in the card and not in a central computer repository miles away. One of the most extensive deployments of the technology so far has been in Denmark, where a consortium of banks and telephone companies, known as Damont, has issued more than 150,000 stored value cards, aimed at very small transactions such as those at parking meters and soda machines. One of the most popular applications has been in laundromats, which have found that the cards reduce theft and vandalism due to the absence of coins in the machines.

Visa and its members plan to showcase their chip-based prepaid card application during the 1996 Summer Olympics at Atlanta. Meanwhile Key Federal Savings Bank and Mobil Oil Corp have introduced a stored value card for purchasing gasoline and other services. Unveiled in Dallas, this service allows consumers to load up their card in denominations of \$25, \$50 and \$100. This is a precursor to the technology that Visa and others have introduced, though, since it operates on a magnetic stripe and on-line connections, and not on an integrated circuit chip. On the other hand, First of America Bank Corp. Will install the first bank-issued smart card university system at the University of Michigan and Western Michigan University this fall. This smart card will function as an identification card, an ATM card, a stored value card and a building access card. More than 200 merchants near the campus are expected to accept the card. Other companies hope to develop cards that will house reservoirs of information for the consumer. These include information on the holder's credit lines, finances, car registration, passport, medical records, door key, and notes and reminders.

Concerns

The stored value card will definitely be a plus to consumers, especially as the technology advances. There are, however, some concerns that go along with the benefits of these new ideas.

- Will stored value cards keep financial transactions anonymous?

Presently, with cash, once a transaction is complete it is virtually impossible to trace who made the purchase. Many Americans value this anonymity when conducting business. This technology has the possibility of tracking people and keeping complete records of their purchases. This is a plus when it comes to surfacing the underground criminal economies, but can definitely encroach on the privacy of law abiding citizens.

- How secure can a stored value card be?

The current technology being developed calls for a microchip that can be read and written. One concern is, using the University of Michigan smart card system as an example, what if someone sets up a dummy door access machine that can actually read information off of students' smart cards. This person would then be privy to other students' ATM and stored value

cash. Unlike cash, integrated chips are subject to damage which could alter ones value of money available. A torn or wet bill is relatively easy to exchange for the same value, but what about a worn or bent stored value card?

- How will this technology affect poor communities?

If this technology is a successor of the ATM card and there are very few ATM machines in poor neighborhoods, where does this leave them? Many see the electronic purse as eliminating cash, so this could have a severe effect on neighborhoods that are currently under served by financial institutions. The implementation of this technology would seem to take effect in these neighborhoods last, and dampen the ease in which their citizens can perform necessary daily purchasing tasks.

Electronic Banking

Electronic Banking is taking place every day. From ATM transactions to simple credit card purchases, currency is being exchanged over phone lines. The future, though, bodes well for all banking functions being performed over the Internet and even the complete elimination of cash.

In the near future consumers are going to be able to make payments from touch tone phones, personal computers, screen phones, personal computers and personal intelligent communicators. This technology will then lead to "virtual banking", so consumers will be able to make deposits, pay bills, invest in stock, purchase an insurance policy and take out a mortgage loan without ever actually seeing their banker face-to-face. There are many companies that offer some sort of on-line banking services that can be accessed by doing a Net Search for electronic banking.

Concerns

There is no question that electronic banking offers convenience and the safety of banking at home, but there are also concerns that arise.

- How secure are banking transactions that occur on-line?

As with any transaction that occurs over the phone lines, the issue of security is a big concern. There are forward thinking companies, such as Electronic Data Systems (EDS) and Cybercash, which handles credit card payments, which have created encryption systems to secure financial transactions over the Internet. Electronic Data Systems takes customers off the Internet and places them onto EDS' private network, where all transactions are secured with encryption. As with the stored value cards, will some hacker be able to copy the digital codes that the funds are being transmitted on (like cellular phone "cloning")? Digital forgeries are also a real problem, since they are by definition, perfect copies (two identical strings of numbers).

- How will people recognize a legitimate on-line bank?

With more than 30 million users today and 200 million projected to come onboard in the next two years, there are a vast number of people who could use the Internet for ill gains. Any organization can become a global publisher by establishing an information site on the Internet's World Wide Web. Thus, criminals could possibly download vital credit card and stored value account numbers by setting up their own home page.

- How will the government be able to regulate commerce and banking on the Internet?

Some "cyberpunks" have suggested that the ultimate e-cash will be a currency without a country, with maybe corporations like Visa and MasterCard controlling the currency. In the November 26, 1994 edition of *The Economist*, an article titled "So Much For the Cashless Society. (Electronic Money)" the author raises some very interesting points.

"If people who log on to the Internet are localized geographically and thus subject to a particular set of national laws, the traffic that they create on the Internet is not very obviously anywhere at all. When global digital cash becomes a reality, tax men will have their work cut out deciding how to assess assets that might be stored on a different computer in a different country every day, even assuming they could ever find the assets or the computers. And for those who chose to evade tax actively, the opportunities offered by the Internet would be absurdly tempting, just as they already are for pornographers."

Another school of thought on this subject suggests that "Money does not have to be created legal tender by government: like law, language and morals it can emerge spontaneously. Such private money has often been preferred to government money, but government has usually suppressed it. (F.A. Hayek, *Denationalisation of Money - The Argument Refined*)."

Finally the issue of keeping up with the constantly changing technology is one that the government has to keep a keen eye on. Will developers be able to create new technologies that will make loopholes in the tax law, faster than agencies can re-regulate, etc.?

- How will electronic banking affect poor communities?

As noted above in the stored value card section, poor communities lack neighborhood banking services. An absence of these institutions and the money to help provide the new technology to these communities, will help deepen the economic turmoil that rural and urban communities of America are already in. The elimination of cash as legal tender without fully supplying every American with the opportunity to interface with the new technologies, could set a dangerous precedent in further limiting the ability of these communities to revitalize themselves economically.

WRITTEN TESTIMONY

OF

**DUDLEY NIGG, EXECUTIVE VICE PRESIDENT
WELLS FARGO BANK, N.A.
SAN FRANCISCO, CALIFORNIA**

ON BEHALF OF

THE CONSUMER BANKERS ASSOCIATION

ON

THE FUTURE OF MONEY, PART III

BEFORE THE

**DOMESTIC AND INTERNATIONAL MONETARY POLICY SUBCOMMITTEE
HOUSE BANKING AND FINANCIAL SERVICES COMMITTEE**

MARCH 7, 1996

Mr. Chairman and members of the Subcommittee, my name is Dudley Nigg. I am Executive Vice President of Wells Fargo Bank, N.A., in charge of the Direct Distribution Group. I also serve on the Alternative Retail Delivery Committee of the Consumer Bankers Association ("CBA")¹. The committee's purpose is to identify and develop policy issues and solutions that affect the electronic delivery of banks' retail products and services.

I appreciate this opportunity to appear before the Subcommittee on behalf of Wells Fargo² and the CBA to testify on the impact of new technology on banking.

BACKGROUND

Despite the tremendous level of recent attention, technological change has actually been occurring for many years in the banking industry. In the late 1950's, as commercial banking shifted and expanded toward retail banking, banks began to use a new technique that automated the check processing system. By encoding checks with magnetic ink, banks were able to cope with the huge increase in the volume of paper. At the same time, banks entered the credit card business. This required a new level of interconnection as hundreds, then thousands, of merchants and issuers dealt with millions of consumers.

The 1960's witnessed the development of electronic payment services. Banks that had computerized their check handling procedures began to find new ways to use computers and electronic data processing capabilities.

Electronic funds transfer systems were formed as a pre-cursor to the national ATM network we know today. Later, the capability for point-of-sale (POS) transactions evolved, allowing customers to use debit cards at retail outlets.

¹ CBA was founded in 1919 to represent retail banks nationwide. Today, it represents approximately 750 federally insured bank holding companies, banks, and thrift institutions that hold nearly 80 percent of all consumer deposits and more than 70 percent of all consumer credit held by federally insured depository institutions. CBA's focus is on retail issues, including deposit, investment, and lending products and services. Its membership includes bank holding companies, regional, super-regional and money center banks, and community banks and thrifts.

² Wells Fargo was founded in 1852 during the California Gold Rush. Today, the bank operates one of the largest consumer banking businesses in the U.S. serving some 3.5 million California households. Wells Fargo provides a broad range of financial products and services through electronic and traditional channels, allowing customers to access their accounts seven days a week, 24 hours a day.

Now, as technology has become more economical and readily available, and as we approach the year 2000, ATM services are mature, POS services are widely available but still growing, and home banking services are beginning to grow rapidly.

Today's marketplace reflects an evolution of technology and of consumer preference. The pace, however, has accelerated, some would say exponentially. New equipment using microprocessors provides advanced capabilities for products and services. At the same time, fewer consumers actually do their banking business in the bank. Instead, they use telephones, ATMs, POS terminals, credit, debit and stored-value cards, automated response centers, and personal computers. If consumers want to transact business, they can even go to a supermarket rather than a traditional bank branch in many markets.

Banks -- and our competitors -- continue to apply technology to develop customized banking products and services, offering greater convenience and efficiency to customers. My own company provides examples of how these delivery systems are evolving.

Wells Fargo has been a leader in the efficient delivery of banking services, from the days when its Overland Express stagecoach service delivered money and mail in the Old West to its Custom Access electronic banking service that enables today's customers to electronically access their bank accounts seven days a week, 24 hours a day.

Here are some examples of how Wells Fargo uses technology to benefit customers directly:

Custom Access allows direct deposit customers to pay their bills without checks, shop without cash, and get account information more easily. Custom Access also provides free of charge, bill payment services, unlimited touch-tone telephone banking, and PC access.

Our telephone banking centers let customers bank anytime, day or night. They can do virtually all of their banking, from opening a credit card account to investing in a mutual fund, by speaking with a representative, or by using the automated touch-tone phone service.

Wells Fargo EXPRESS ATMs accept additions to investment accounts, automatically pay bills, and even sell postage stamps.

We provide in-store banking centers and full-service branches at over 300 supermarket locations throughout California.

We are also excited about a number of new high-tech services. Wells Fargo On-Line lets customers manage their bank accounts directly from their personal computers. Customers can check account balances, pay bills or transfer money between accounts.

Internet users can check their Wells Fargo account balances and make payments to some merchants.

PC Manager, a cash management software program for commercial businesses, links companies and the bank on-line. Users can conduct wire transfers, issue stop payments, and download spreadsheets via personal computer.

Our business customers also have access to a check reconciliation program called Positive Pay that helps them reduce check fraud. It electronically lists a company's most recent checks that are presented for payment. By comparing its list to the bank's, a business can identify potentially fraudulent checks and select those items for nonpayment.

The Wells Fargo Purchasing Card, a business-to-business credit card, simplifies the purchasing process electronically and lets a company place spending limits on individual cardholders.

Lastly, our Credit Sweep Account, made possible by advances in systems technologies, consolidates borrowing, investing, funds transfer, and business checking into one account.

Why are we providing all of these products and services at Wells Fargo? We know consumers will use the financial service providers -- banks or non-banks -- that provide the best service. With these products, we are meeting the changing needs of our customers.

The banking customers of the 21st Century are being raised on advanced technology and they will insist on technologically advanced banking services. People are using new technology in virtually every aspect of their daily lives, from VCRs and video games to telephone answering machines, microwaves, metro fare cards, and library card catalogs. The phenomenon of E-mail has become a fixture in the office workplace. Workers are paid by direct deposit. Federal pension and social security recipients can receive benefits by direct deposit, or on electronic benefits transfer (EBT) cards. The newest and next generation of banking customers is now doing their nightly homework on personal computers.

CONGRESSIONAL ACTION UNNECESSARY

The CBA believes that it is appropriate that Congress exercise its oversight function to maintain an awareness of technological changes that are affecting the banking system. We understand that Congress will need to keep abreast of them to prevent serious competitive imbalances and to assure adequate safeguards.

We believe it would, however, be premature for Congress to undertake any major, legislative initiatives because it is too soon for any of us to know what specific technologies will prevail, and what regulatory concerns they will raise. Any major initiatives at this time could impede the process of modernization, and could have the unintended effect of hurting not only consumers but also the competitiveness of U.S. banks.

The pace of change in the banking system in response to technological innovation is rapid but it is not so rapid that we cannot study and assess the need for appropriate regulation. To the contrary, banks and non-bank service providers alike recognize the need to build in security safeguards and consumer protections in order to gain customer confidence and market acceptance of the new technologies. At this time, I do not foresee the development of unregulated "money" or an alternative unregulated electronic banking system.

The CBA believes that the federal banking regulators have sufficient regulatory jurisdiction and discretion at present to deal with any safety and soundness issues. The bank regulators have been very active in this area. CBA banks, collectively and individually, have met frequently with bank regulators to identify and respond to areas of concern. We will continue to keep the regulators apprised of new electronic products and services.

The existing bank regulatory apparatus can accommodate the new technologies, provided the rules are administered realistically. One good example is the Regulation E receipt requirement for transactions that use "access devices." Such a regulatory requirement could hinder the development and utilization of new electronic banking services, such as smart cards. It would be prohibitively expensive and unnecessary for a system to give the customer a written receipt every time the customer uses a smart card to purchase a soda or make a 25 cent telephone call. The CBA has been working with the Federal Reserve Board on this and other issues of importance under Regulation E. In fact, the Federal Reserve Board is currently reviewing the issue and a proposal is expected this spring.

The banking industry itself is undertaking substantial initiatives to address concerns regarding consumer protection, security, and privacy of customer information. These initiatives are premised on the realization that new electronic banking products and services will be of little benefit to our customers if we cannot guarantee a high degree of system integrity.

THE FUTURE

Three factors are stimulating the growth of electronic transactions: decreasing technology costs, Internet commerce, and a revolution in retail marketing. As the economics of electronic banking take hold and drive down the cost of delivering financial products, the movement toward new technologies increases.

Reducing costs is one major reason for the increase in electronic banking. Cash and checks are very expensive to process. Banks are therefore motivated to adopt less-costly electronic commerce alternatives. Approximately 56% of consumer transactions in the United States are cash and 29% are by check. Credits, debits, and other electronic transactions account for about 15%, and are expected to increase rapidly. Numbering 33 billion in 1993, electronic transactions are expected to climb to 118 billion by the year 2000. For the same period, paper transaction are forecast to show very modest growth, from 117 billion in 1993 to 135 billion in the year 2000.

We're seeing tremendous interest in electronic commerce through the Internet and the World Wide Web. In 1994, 5.3 million homes accessed the Internet. In 1995, the number nearly doubled to ten million, and by the year 2000, 29.2 million Internet users are expected. Consumers accessing the Internet, World Wide Web, or some other on-line service can check mortgage rates and stock quotes, book airline tickets, watch movie previews, and order tickets for entertainment events. The opportunities are increasing daily and banks, retailers, and other businesses are going to have to satisfy their customers' needs in the "virtual" world.

Computer software and telecommunications firms have been developing enhanced electronic services that have the capacity to deliver financial services efficiently to a global customer base through the Internet, the World Wide Web and other channels that cross traditional geographic and product barriers. These technology firms are looking for ways of marketing their products and services to banking customers. Many of them are entering into

alliances with banks and working jointly to deliver electronic banking services. Some are working to build alternative delivery systems that can operate without the participation of banks.

Banks are investing billions of dollars in computer hardware and software and committing enormous personnel resources to technological applications that will offer maximum convenience and efficiency to their customers. They are doing this to provide the best possible service to customers and to remain competitive in an environment in which non-bank financial service firms are offering enhanced bank-like services to bank customers.

A great deal of attention is being focused on technologies that make electronic commerce over the Internet possible, like smart cards and secure Netscape browsers. At the end of the panel today, I would like to demonstrate the Mondex card technology. It is an exciting new product that our bank is piloting in San Francisco, and I believe it will show you how innovative and efficient these new products can be.

ALL CUSTOMERS HAVE ACCESS

The banking industry is taking steps to ensure that all segments of our customer base have access to enhanced banking technologies.

Recognizing that our customer base is not completely technology-proficient, banks have been active in making the improved technology work for all customers. Some are providing access to technology-based education in schools. Many are expanding their outreach efforts to teach people how to use electronic services offered by banks. For example, one CBA member in the northeast employs a full-time unit of educators. Charged with educating community groups, church groups, legislators, and various public officials, the unit holds several hundred seminars, complete with individual instruction and demonstrations.

SECURITY

Everyone with a stake in the development of enhanced banking technology is keeping a watchful eye on issues of concern to our customers, especially security. Each breach of security is reported far and wide, attracting a tremendous amount of publicity. This is a good thing. It helps ensure that potential problems are uncovered and addressed quickly. For example,

Princeton University researchers recently found a potential security flaw in Netscape's Internet browser technology. Within days, Netscape said they would issue a software fix.

Though an open environment where breaches are publicized will lead to a more secure system, I personally believe that the security problem has been exaggerated due to all the publicity. All the stakeholders in the electronic banking arena are working hard to make certain that the system is secure.

The banking industry is participating in a number of initiatives, addressing the security of the customer's financial information. ANSI, the American National Standards Institute, is developing a single secure electronic payment syntax. A group of banks, clearinghouses, and government laboratories have joined forces, forming the Financial Services Technology Consortium (FSTC) to develop on-line security standards. Commercenet is another consortium of banks, technology companies, government agencies, and other companies devoted to the establishment of on-line standards that will facilitate electronic commerce. Mastercard and Visa recently announced a joint initiative to govern and safeguard financial Internet transactions.

PRIVACY

Related to security is the issue of privacy. Bank customers trust banks with sensitive financial information. They expect us to treat their information with respect. We recognize a customer's expectation of privacy, and we believe that customers ought to have some control over the use of this information. At the same time, if customers elect to allow it, banks should be able to use the information for the customer's benefit.

Technology has made it easier to collect and store information about customers. This is true for all industries, not just banking. The wise use of the new technology will enable banks to offer greater service and convenience to our customers at a lower cost.

The CBA has taken the initiative on this issue and is developing a privacy code, setting forth voluntary standards for the industry. When completed, the code would require CBA members to establish internal privacy standards addressing such matters as what information should be collected, the ability of customers to control the use of information about them, the permissible uses of customer information, limitations on access to and the release of customer

information to third parties, education and training of bank employees on the handling of customer information, and other matters.

CBA INITIATIVES

The retail banking industry is driving and being driven by the changes we have discussed today. CBA has established an Alternative Retail Delivery Committee to develop policy on issues affecting these new delivery systems. The Committee has met with regulators and will do so on an ongoing basis, to keep policymakers attuned to these rapidly changing developments..

In addition, CBA is reviewing the privacy guidelines outlined above for banks and we expect to complete the final version this summer.

One other development may be of interest to this Committee. Last July, the European Union issued a privacy directive that may have an unintended impact on businesses in the United States. CBA is scheduling meetings to educate the banking industry and other U.S. businesses on the directive.

In summary, I appreciate this opportunity to present testimony today. The Committee has recognized the importance of a set of issues which are changing rapidly and are having a last impact on the financial services industry. We think that the issues of security, privacy, access, and innovation are important. At the same time, we do not see the need for any remedial or preventative legislation at this point. We look forward to working closely with the Committee and staff and sharing more information as events progress.

I would be happy to answer any questions that you may have.

Statement

of

Frank Wobst
Chairman and CEO
Huntington Bancshares, Incorporated, Columbus, Ohio

on behalf of

The Bankers Roundtable

on "The Future of Money, Part III"

before the

Subcommittee on Domestic and International Monetary Policy
Committee on Banking and Financial Services
House of Representatives
Washington, D.C.

March 7, 1996

Mr. Chairman and Subcommittee members, I am Frank Wobst, Chairman and Chief Executive Officer of Huntington Bancshares Incorporated, Columbus, Ohio. I am pleased to have the opportunity to appear before the Subcommittee on behalf of The Bankers Roundtable to comment on the future of money as it affects banking companies and the payments system, both in the U.S. and abroad. The Roundtable's membership is open to the 125 largest banking companies in the United States. On March 7, 1995, the Roundtable testified before the House Banking Committee on the significance of technology to financial services modernization; my comments today are a follow-on to that earlier testimony.

I serve as the head of the Roundtable's Technology Task Force, which has been formed to assist the Roundtable membership in sorting through the various issues associated with the advance of technology. As Chairman and CEO of Huntington Bancshares, Incorporated, a \$20 billion financial institution, I believe that future success of our institution is tied to employing effectively the new technologies to meet the needs of our customers and the challenges from our competitors.

Summary

While many banking institutions have undertaken a variety of initiatives in electronic banking, recent developments and the interest of nonbank providers have accelerated the velocity of change and the potential for major rearrangements in the provision of financial services. As this Subcommittee's hearings have demonstrated, there is a complexity and a seriousness to these issues which requires us to constantly monitor the changes underway and to seek a better understanding of their impact. I hope that I can add to that understanding today, from my perspective both as the CEO of a large regional banking company and as the head of the Roundtable's Technology Task Force.

Simply put, we see major opportunities to enhance service to customers -- retail and wholesale -- and at the same time to strengthen our financial institutions. At this time, it is clear that the market has yet to sort out, among the various options that seem possible, which delivery systems optimize consumer value while making business sense. Once business and consumer needs and choices become clearer, there will be time for the government to revisit the laws and regulations applicable to the new systems in order to insure fairness in the marketplace and safety and soundness in the payments system. Thus your Subcommittee's pioneering work is of value in helping to lay the groundwork for what may follow.

It is the view of the Roundtable that legislative action is not needed at the present time. Any attempt to regulate or direct technological change would be premature and would stifle innovation and competition. It should be left to the marketplace -- to the maximum extent possible -- to pick the winners and losers in the technological sweepstakes. Consistent with that will be a concomitant responsibility on the part of all providers to assure the privacy and safety and security of electronic banking and financial transactions generally.

Market-Driven Focus

No technology, no matter how elegant, will have value or staying power unless it serves customer requirements. We at the Huntington place great emphasis on analyzing customer responses to new ways of delivering financial products and services. While the financial services business always has been market driven, the speed of product development, and the costs of error in today's marketplace have impressed upon banks and other financial service providers the importance of insuring that they do their homework with a special eye to customer utility, cost and value. Be it hardware or software -- or the mix of financial products and services -- consumers and businesses nowadays can accept or reject a system, product or service with unusual speed. As you know, various experiments are underway or being planned -- such as the one in Delaware -- to ascertain how customers will react to electronic money technologies. We have brought this same market-driven focus to our work on the Roundtable's Technology Task Force.

Questions for the Banking Industry

One thing that the work of the Technology Task Force has made abundantly clear is that while definitive answers may elude us as we await the next technological breakthrough, it is imperative that we keep pressing ahead, asking critical questions to help focus our thinking. So far, the Task force has focused on four areas -- delivery systems, payments systems, security and privacy issues, and the role of law and regulation. Important delivery issues have to do with how banking, financial, and information-related services are going to be delivered to customers in the future, and what business entities will be involved.

Payments issues include the continued safety and soundness of the payments system and the nature of money in an electronic world. "Smart cards," stored-value cards and other forms of electronic money obviously are a central concern of the Task Force both as delivery and payments vehicles.

Resolution of security and privacy issues is essential in assuring customers that their electronic transactions will be handled securely and confidentially. Among the legal and regulatory issues is the question of how to insure that our nation's banking and financial laws are appropriately attuned to the needs of customers utilizing electronic commerce.

Electronic Money

It is well to keep in mind that the bulk of payments today, both domestic and international, are made electronically when measured by dollar volume. However, the number of transactions using currency, coin, and paper checks is enormous and the dollar volumes of those transactions still are very significant. To illustrate this point, I have attached to my statement a chart that appeared in the 1994 study, "Banking's Role in Tomorrow's Payments System," published by the Roundtable. [Chart #1]

In the not too distant future, I believe we will see a transition of the smaller-denomination payments from traditional to electronic means. The upshot will be greater convenience for consumers and small businesses, higher levels of security, and much lower costs. What we do not know today is what kinds of electronic money and their associated delivery systems will win out. The choices soon to become available in the marketplace range from electronic bill presentment and payment, electronic checks and cash, "smart cards" offering various kinds of financial products and services via an electronic chip embedded in plastic, and simple stored-value cards that are becoming increasingly prevalent. The explosion of interest in the Internet in the last twelve months adds intriguing new possibilities. As the appearances of Wells Fargo and Security First Network Bank on this panel attest, we are now seeing banking companies experimenting with on-line product and service offerings to customers through "virtual banks" worldwide that would have been unthinkable a few years ago. In short, the variety of options is multiplying rapidly.

The Huntington Experience

By way of illustration, permit me to discuss some of the initiatives undertaken at Huntington Bancshares -- the ideas, the testing, what we've learned and what we foresee. Huntington has been a pioneer in using technology to increase the convenience and value of banking services for customers, and to introduce operating efficiencies into the company that have increased our standard of service, making it faster and more responsive to customer requirements. Most significantly, we have

been able to provide our customers with 24-hour banking convenience through a variety of access points.

- Huntington began to prepare for information banking as far back as 1989, when we began to develop a strategic information foundation as a core business equity. The result of this strategy was the establishment of an integrated information system we called SIMS, or Strategic Information Management System. SIMS has allowed us to bring together bank product information, complete customer data, and relevant external information such as credit reports. The system is constantly reviewed, refined, and updated to meet growing consumer expectations of convenience and speed. Because we had the strategic information foundation in place, Huntington was able to begin to provide direct electronic delivery of banking services as early as 1992.
- Huntington first employed its strategic information base to deliver banking services electronically in a way that would be most comfortable for our customers: over the telephone. Our research suggested, and experience confirmed, that consumers' familiarity with the telephone would make direct transactions by this means seem natural and convenient. The new banking option was positioned as a new, separate way of banking with the name "Huntington Direct," and provided 24-hour, 7-day access to banking with a live telephone representative. The program, which was unique in the United States at that time, was a clear success within one year of startup. Today, Huntington Direct's trained Personal Bankers and financial services specialists handle millions of calls annually, serving more than half our customers, who are using some combination of telephone and ATM access to a full range of financial services, including loan applications and investments. The lesson of Huntington Direct has been that convenience is a key issue for very large numbers of consumers; and our strategic planning has been based on this experience. Customers will appreciate the opportunity to migrate to additional, even more convenient electronic access modes, as these modes grow to become as familiar as the telephone.
- In the same year -- 1992 -- Huntington established a resource for electronic commerce that has supported the growth of cost-effective, efficient electronic transfer of funds throughout the nation. The National Clearing House Association (NCHA) was the first national organization of banks to send and receive checks across the country

through direct bank-to-bank presentments with net settlement through the Federal Reserve. In its first year, NCHA handled approximately two hundred thousand items per month. By the end of 1995, its 160 members, including Bank of New York, Bank One, Citibank, First Union and Keycorp, generated a transaction volume of between seventy and eighty *million* transactions each month. [Chart #2]

- The Personal Touch Video Kiosk, in 1994, became the next major advance in our strategic drive to make banking ever faster, simpler, more convenient and less expensive for customers. The Personal Touch Kiosk, developed in collaboration with NCR (formerly AT&T GIS), was the first equipment of its kind to be introduced to the public. It provides customers with an opportunity to video conference with live bank personnel, located at Huntington Direct, 24 hours a day, thus combining the convenience of the ATM with the complete, personal service of the traditional bank lobby. Again, the success of this advance is based on familiarity and simplicity for the user. Personal Touch adds eye-to-eye contact to familiar telephone contact, helping to move customers from the time limitations of traditional banking lobbies to a more automated, accessible style of service. The acceptance curve is excellent, and still on the upswing. Huntington now has 19 Personal Touch Video Kiosks in three Ohio cities, including installations in a hospital and several supermarkets that once again expand accessibility to places where customers need banking services. Strong customer acceptance has validated the video kiosk approach as a foundation element for a multi-faceted direct access banking strategy.
- To maximize the value of the Personal Touch Video Kiosk to customers and to the bank, Huntington opened, in the fall of 1994, its first complete "Huntington Access" branch in a downtown office complex. The strategic element of familiarity was maintained by creating a totally secure "bank office" atmosphere that was at once traditional and comfortable. In addition to Personal Touch kiosks, we added advanced ATM machines with document processing capabilities, thus making electronic deposits as natural and customer-friendly as electronic withdrawals through ATMs have been for years. While access branches increase the level of convenience and accessibility for customers, at the same time this strategy dramatically reduces bank operating costs, by limiting the number of personnel needed in each branch to just one or two. Of course, some of our older customers have chosen to move to

traditional banking offices rather than utilize the new direct methods of banking. Most customers, however, prefer to remain in control of their time and their transactions, and we have been able to open ten offices in our home state of Ohio. Additional Huntington Access offices will be introduced in additional markets, beginning with Orlando and Tampa Florida later this year. These offices will provide customers with a new, more convenient way to bank, with access to trained Huntington Personal Bankers via a toll-free number, as well as use of Honor, MAC, Cirrus, and Plus ATMs at no charge from The Huntington. These developments illuminate the touchstone of Huntington's electronic strategy: ensuring that customers have a choice of access modes that allows them to select the one style of access that is convenient and comfortable for them.

- In 1995, Huntington took a firm and determined step into cyberspace, moving beyond the familiar atmospheres of telephones and bank lobbies onto the Internet. In partnership with Wachovia Corporation and Cardinal Bancshares, Huntington established two companies: Five Paces Software and Security First Network Bank. As Mr. Karlin will point out, SFNB opened in the fall of last year for business on the World Wide Web, the first Internet only bank in the world. The secure operating environment created to protect SFNB customers and assets provides a foundation for building public trust in the safety of Internet transactions equal to the comfort people now have in telephone-based transactions. As the public becomes more comfortable with online interactions, and the security surrounding them, this mode of banking seems likely to become a preference for large numbers of people. Customers of Security First are taking a dramatic first step, in signing up with a bank that exists solely on the World Wide Web, and we are finding acceptance for this among a large group of users throughout the U.S. Huntington's own branded Internet bank, using the same software and security systems as SFNB, will be online in the first half of this year; for existing and new Huntington customers, this will be an added access option in a growing menu of increasingly convenient choices.
- Huntington and the Battelle Research Center in Columbus have completed an initial test phase for yet another electronic method for consumers to access and use their funds in a variety of situations: the Smart Card, which looks like a credit card, but adds the data storage

capabilities of an embedded microchip, will make it easy and simple for consumers to carry and use information about their accounts. The system, developed by Huntington, Battelle and CyberMark, has multiple applications, including stored value transactions, identification and entry to secure locations, and value replacement of the card itself. Because of its flexibility, the Smart Card ultimately will allow consumers to access their money electronically from a variety of ways, such as digital cash for small purchases and secure transaction processing of purchases over networks. At Battelle, the Smart Card will be used for employees' personal information management. The first use for Smart Cards, however, will be in the context of closed-campus environments in the Huntington's market areas, during this year.

Overall, our experience has shown that many consumers are more than merely comfortable with technological development. The fact is that the public demand for increased convenience, responsiveness, and value is driving technology forward. Huntington Bancshares will continue to keep pace with its customers, by building new and creative ways to provide fast, simple, and convenient service.

Roundtable Initiatives

Mr. Chairman, The Bankers Roundtable also is moving to address technology issues -- both near term and those that lie somewhat more in the future.

First, we are making sure that our member companies, which comprise some 70% of domestic banking assets, are alerted to the issues associated with electronic commerce. The challenges and opportunities are enormous. The banking industry faces competitors utilizing a wide range of new technologies to deliver banking, financial and information-related products and services to customers. These new technologies are breaking down the barriers between existing competitors and fostering new ones. This is allowing users to obtain products and services from a wider array of providers, which is enhancing competition. The challenge for the banking industry and public policy-makers is to assure that banking is not inhibited in meeting that competition and fulfilling user needs by outdated or ill-conceived legal and regulatory constraints not applicable to other providers.

Second, we are looking to work cooperatively with the government. We will want to keep this subcommittee, and Congress generally, alerted to developments in the marketplace and the payments system. It is likewise important that we work closely with the Executive Branch and the bank regulators as developments occur.

Third, we are identifying a tentative range of issues and options that could lead to cooperative industry action. For example, The Roundtable is looking at the possibility of developing sets of principles on security, privacy, and related issues that could serve as the basis of guidelines for industry practices. Obviously such development, should it be pursued, would be done in conjunction with other industry organizations and after full consultation with the federal bank regulatory agencies.

I would note here that international concerns may require both vigilance and close cooperation among government and industry groups. All of the issues we are now confronting can be affected by international regulatory actions, particularly as they relate to cross-border data transmission. We need to guard against preemptive international regulatory actions that may adversely affect marketplace developments in the United States.

Conclusion

Let me conclude by noting what experience has proven: we can expect many changes to come quickly and at the same time, others of even more far-reaching significance may take a longer time. We have all seen automated teller machines (ATMs) rise to the forefront of bank and consumer preferences, but it must be remembered ATMs have been around for over twenty years. We have seen much of the commercial world turn to electronic payments, and now we may see the consumer transactions move in that direction. Time will tell how significant these changes will be. Consequently, public policy will benefit from a degree of patience and understanding as to the unpredictable outcomes resulting from today's technological ferment. I can assure the Subcommittee that the banking industry, as represented by The Bankers Roundtable, shares the subcommittee's concerns that safety and soundness remain a centerpost of our financial markets, and that the public's right to privacy be protected. A commitment to work together to insure the strongest, most efficient financial marketplace benefitting users and providers of products and services is in all our interests.

Let me end by stating that the work you have begun Mr. Chairman is critical. I congratulate you and the Subcommittee and encourage you to continue your pioneering oversight role.

* * *

Payments System Transactions

Value of Transactions Number of Transactions

**Electronic
Based
Payments**

**\$448.5
Trillion/Yr**

**about
14.2 Billion/Yr**

**Paper/Check
Based
Payments**

**\$87
Trillion/Yr**

**about
58.4
Billion/Yr**

**Cash
Payments**

**\$2.7
Trillion/Yr**

**about
300 Billion/Yr**

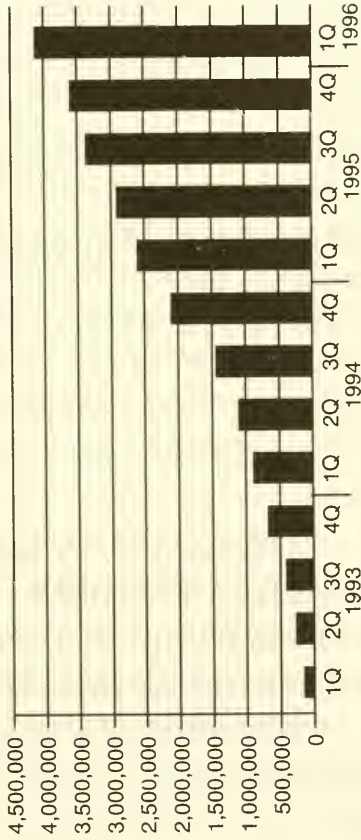
Currency

CHART 1

Source: Payment Systems in the Group of Ten Countries, Bank for International Settlements, 12/93; Furash & Company estimate

CHART 2

Average Daily Item Volume by Quarters (1993-96)



NCHA Data



Huntington

Presentation To The
Subcommittee On Domestic And International
Monetary Policy
Of The
Committee On Banking and Financial Services
One Hundred Fourth Congress
U. S. House of Representatives

Richard K. Wilhide
Vice President
Wilmington Trust Company
1100 N. Market Street
Wilmington, DE 19890

Good morning, Mr. Chairman and members of the Subcommittee. It is a great honor to speak with you today at these hearings on the future of money.

I am Richard K. Wilhide, Vice President and Manager of Delivery Systems of Wilmington Trust Company in Wilmington, Delaware.

Wilmington Trust is one of the nation's leading fiduciary institutions, serving personal, institutional and corporate clients around the world. Currently, the company has over \$82 billion of assets in trust, custody and asset management relationships. Wilmington Trust is the ninth largest personal trust bank in the nation, with trust offices in Delaware, Pennsylvania, Maryland, Nevada and Florida.

Wilmington Trust's commercial banking operations are concentrated in Delaware, Maryland and southeastern Pennsylvania, with 65 banking offices in the region. As of December 29, 1995, the company had \$5.4 billion in assets and \$3.5 billion in loans. The primary subsidiary, Wilmington Trust

Company, was founded in 1903 and is the largest, full-service, independent commercial bank in Delaware. The results for 1995 produced a return on average assets of 1.83% and a return on average stockholders' equity of 20.70%. This marks the eleventh consecutive year that the return on stockholders' equity exceeded 20%. These important measures of performance continue to rank Wilmington Trust among the very best in the industry.

Even though we are not as large as other banks that have appeared before you, Wilmington Trust has long been an innovator of electronic delivery systems. We formed the first shared ATM Network in Delaware in 1983. We have been a leader in in-lobby ATMs and self-service banking, off premise ATMs at supermarkets and corporate sites, PC platform automation, on-line and offline debit products, audio response systems, home banking, telephone bill paying and stored value card development. Over 100 banks throughout the world including Bank of America, First Interstate, Chemical Bank, Corestates , National Bank of Detroit, Sanwa

Bank, WestPac, Royal Bank of Canada and Household Bank of England have visited us in Wilmington to gain an understanding of our delivery systems approach.

As bankers, we have the responsibility to provide payment mechanisms to meet the needs of our retail and corporate customers. Notwithstanding this responsibility, one of the new payment mechanisms --*stored value cards*--is developing in the United States. Stored value cards use magnetic stripe technology or integrated circuit chips to store customer-specific information, including electronic money. The cards can be used to purchase goods or services, store information, control access to accounts, and perform many other functions. Stored value cards represent the next major payment mechanism opportunity to the banking industry.

This new payment mechanism offers clear benefits to merchants and to consumers, reducing cash handling expenses and losses due to fraud, speeding customer transactions at the checkout counter, and enhancing

consumer convenience and safety. In addition, many state and federal governments are considering stored value cards as an efficient option for dispersing government entitlements. Other private sector institutions market stored value products to transit riders, university students, telephone customers, vending customers, and retail customers.

Bankers have the opportunity and the resources to develop this payment mechanism to its fullest potential by combining stored value functionality with existing bank products and services. This functionality leverages the present bank infrastructure to create stored value functionality.

- payment cards such as credit, debit and ATM cards;
- funds clearing and settlement mechanisms;
- regional and national ATM/POS networks; and

- retail, corporate and government customer relationships.

Adding stored value functionality to existing products and services enhances their perceived value to the bank customer.

The introduction of stored value cards has gained significant momentum over the last year and I believe the pace will quicken. The introduction of this new form of electronic money presents a number of issues that must be addressed.

Safety and Soundness -- Existing payment mechanisms are built on the foundation of integrity and security. They must work every time so the consumer's need is met.

Transaction data must be handled in a secure manner that is auditable to effectively transfer monetary value to the proper party. In order for stored value cards to be accepted these safety and soundness principles must be maintained.

Regulation -- Historically regulation is necessary in order to maintain safety and soundness. However, stored value cards are in their infancy. It is not possible to determine what regulation is appropriate at this time. This is a situation that requires monitoring to insure that this financial system has safety and soundness.

Consumer protection is critical in order to maintain consumer confidence, to foster usage and encourage merchant acceptance. Consumer and merchant account and transaction information must be protected by maintaining proper audit trails, and encryption techniques. This will allow each electronic money transaction to be authenticated to all parties involved in the transaction.

You have invited me here today to share my experience in the stored value card arena. For the last four years, I've met with consumers and merchants in my market on a daily basis. I find that non-banks are penetrating the stored value card market rapidly without little regulation. I understand they are meeting the needs of a number of

market segments. However, the need for safety and soundness or regulation does not lessen. I encourage you to institute a level playing field for all providers of this form of electronic money, banks and non-banks alike. This will increase the probability that consumers will get an array of choices and at a lower price as well as maintaining integrity and security.

Equal Access -- Stored value cards must be available for all. Introducing stored value cards to the unbanked needs to be encouraged. There are a number of entities which could potentially serve this market. They include government itself, banks, colleges and other non-banks. It remains at issue to who can best serve this market. A stored value card utilizing an integrated circuit chip could contain a stored value purse for purchases and government entitlement programs giving the recipient equal access.

These are just a few of the issues to be resolved.

Shared systems and alliances will be necessary for many of the electronic money mechanisms of the future. A bank our size cannot build the delivery system that provides the service. We will need to buy access as other banks and find creative ways to leverage our own strengths. We can also use our size as an advantage to move quickly, as we understand the business and look forward to new innovations. A regulatory environment needs to be created to encourage banks to take an active role in the development of this form of electronic money. Alliances among institutions, card associations and the private sector must be encouraged and structured to promote growth of the industry.

It is imperative that banks find themselves on equal footing in this new industry as it evolves. Over regulation of the banking industry will slow the growth of this new market.

Thank you very much.

About the author:

Richard K. Wilhide
Vice President
Wilmington Trust Company
1100 North Market Street
Wilmington, Delaware 19890

As manager of Wilmington Trust's Delivery Systems section for the past ten years, Mr. Wilhide has been instrumental in the planning and implementation of all retail delivery systems. He is currently involved in the development of Wilmington Trust's smart card program.

Mr. Wilhide began his career with Wilmington Trust in 1972 as a management trainee. Over the course of his career he has had a variety of responsibilities in branch management and marketing.

He holds a B.S. degree in Business Administration from the University of Delaware and an M.B.A. from Widener University in Chester, Pennsylvania. Mr.

Wilhide is an active member of the ABA Retail Payment Services Committee, the MAC Advisory Council, and ACI User's Group.

Security First Network Bank, FSB
the world's first Internet bank
James S. Mahan, III
Chairman and Chief Executive Officer
and
Michael S. Karlin
President

Presented to:
U.S. House of Representatives
Subcommittee on Domestic and International Monetary Policy
of the Committee on Banking and Financial Services
March 7, 1995

Table of Contents

- I. Commonly Asked Questions About Security First Network Bank
- II. Internet Banking White Paper
- III. Security First Network Bank Security Architecture
- IV. Internet Security White Paper
- V. Security First Network Bank in the News

I.

Commonly Asked Questions
About Security First Network Bank



INFORMATION DESK



Commonly Asked Questions About Security First

Finally, you can use your bank in new ways, with a level of convenience you never thought possible. By reading this document, you can get answers to some of the common questions about banking with Security First Network Bank. Our special guest this time is Skeptical Eddie, who's here to help put your mind at ease.

1. Who/What is SFNB?
2. How is Internet banking different from on-line banking?
3. Okay, you're not limited by time and space when using the Internet, but is it secure?
4. Even the best system has a weak spot. Where's yours?
5. I appreciate the difference between on-line banking and banking with SFNB on the Internet. I also understand that SFNB is like any other bank. My question is, what do I get when I open an SFNB account?
6. How do you make money?
7. What else will SFNB offer? Credit cards, business accounts, money market accounts?
8. Can I contact someone if I have more questions?



Who/What is Security First Network Bank (SFNB)?

Security First Network Bank (SFNB) is the world's first FDIC insured bank to operate on the Internet. SFNB provides many of the same services as any existing "brick and mortar" bank in place today, except we offer the convenience of being on the Internet.

With approval of federal banking regulators at the Office of Thrift Supervision, on 10/18/95 SFNB made history by conducting the first ever Internet banking transaction with a donation to the Red Cross. Since then, SFNB's virtual doors have been open 24 hours/day 7 days/week.



"Pardon me," says Skeptical Ed. "Lots of banks are on the internet now. Why are you guys so special?"

Lots of banks are on the internet, Edward. Very few of them are actually allowing their customers to perform any transactions via the internet, and none are offering the breadth of services that we are. Security First is the world's only full-service bank located predominantly in cyberspace.

How is Internet banking different from on-line banking?

This is an important question and often misunderstood. Banking with SFNB on the Internet is not the same as on-line banking. Internet banking means that:

1. You do not have to purchase any software, store any data on your computer, back up any information, or wait months for new versions and upgrades, since all transactions occur on SFNB's secure server over the infrastructure of the Internet.
2. You can conduct your banking anywhere you have a computer (not necessarily *your* computer) and a modem - whether it's at home, at the office, or in a place outside the U.S.
3. Your bank and the software you use to conduct your transactions are *one and the same* - you are talking directly to the bank when you access your account. You can call/e-mail SFNB's customer service representatives 24 hours a day, 7 days a week, 365 days a year and ask software or bank related questions; they will answer them both. Therefore, you no longer have to reconcile a bank statement or manually track your ATM and paper checks. We update your statement daily and reconcile at the same time. Your electronic payments, paper checks, ATM/debit transactions, etc. are all automatically logged in for you, usually within 1-3 days from the actual transaction.

On-line banking is the opposite - you have to install a software package that resides on your computer. This limits you to doing your banking from only that computer, to making a call to access a separate network, to working with a separate software company and bank who limits their hours of operation. You get the idea - less convenience and higher cost.



"Hey wait a minute," says Skeptical Ed. "I spent too much time learning Sicken, my financial software. I probably have to trash the whole thing now, right?"

*Of course not. In fact, Security First supports the exchange of information via .QIF files. Unlike 'Sicken,' however, you'll **never** need to upgrade when new bank features are added, because they're added on **our** end. Eventually, you'll want to free up some of the hard drive space...but you'll know when that time comes.*

Okay, you're not limited by time and space when using the Internet, but is it secure?

Security is not our middle name, it's our first. Security First Network Bank uses the trusted operating system developed by SecureWare, Inc. of Atlanta, Georgia. SecureWare has invested hundreds of man-years developing security technologies with the Department of Defense. SFNB also has multiple layers of other security in place:

- ▢ Encryption between your computer and our systems
- ▢ A filtering router to verify outside-in transfers and stop inside-out attacks
- ▢ Most important, the Secure Web Platform protects the Bank server where all transactions take place. Among many other things, this platform has removed all root privileges in the server so no one can do any damage if they were to somehow find a way in. This layer is the critical element that is often overlooked, and we are the only bank with this. This is important because most break-ins occur at the operating system level, despite the media's focus on Internet transactions.

This technology is in use by the United States government for handling highly sensitive information like the flight plans for the Stealth bomber. We have **never** been compromised.

Even the best system has a weak spot. Where's yours?

SFNB has no weak spots in the system itself. The most vulnerable point of attack is from users who leave their passwords and account numbers out and accessible. However, even here you are protected with SFNB since we cap movements of money from your account. Like other banks, your deposits at SFNB are **FDIC** insured, up to applicable limits (generally up to \$100,000). SFNB doesn't stop with technical security. We will take any legal steps needed to monitor, locate, and prosecute anyone who attempts to compromise our banking systems.



"Lip service is great," interjects Skeptical Ed. "But I know a few things about computer security. Where can I find out a little more? Or is it some big proprietary secret?"

Ed, this is your lucky day. A complete set of white papers on our security architecture can be found [here](#). Have a ball.

I appreciate the difference between on-line banking and banking with SFNB on the Internet. I also understand that SFNB is like any other bank. My question is, what do I get when I open an SFNB account?

A checking account at SFNB is just like the checking account you currently have. However, the rates and convenience are better. All you need is a Social Security or Federal ID number and a U.S. address to open an SFNB account. Your SFNB account includes:

- ☐ no minimum balance fees, take it to zero if you want, it's free
- ☐ 20 free electronic payments per month, more than ample for most people. Please note, an electronic payment is when you input into our system a company or person you want to pay (just like writing a check). SFNB will make certain that person is paid whether or not they accept electronic payments. If they do not accept electronic payments we will have a paper check mailed to them. There is NO CHARGE to you for the first 20 electronic payment requests made each month. Yes, we cover the postage and check printing cost.
- ☐ a free ATM card with 10 free transactions a month; you only pay if another bank charges. However, we have found in some cases, you can avoid all ATM charges by "withdrawing" money when using the card for debits (e.g., pay \$50 for a \$20 grocery purchase and receive \$30 in cash from cashier, free of fees).
- ☐ if you qualify, a Debit card
- ☐ the first 200 paper checks, free
- ☐ unlimited paper check writing privileges
- ☐ for deposits, free pre-stamped addressed envelopes. We also accept direct deposits, like any bank.
- ☐ telephone access to your account to get info and conduct certain transactions

You also get the convenience of doing your banking anytime, anywhere you want without having to stuff envelopes, track ATM receipts, track paper checks, back up your data from your computer, pay for software, limit yourself to the computer where the software resides, and so forth - FREE.



"No free toasters?," says Skeptical Ed. "No silverware, lollipops or balloons?"

Sorry, Eduardo. No toasters, silverware, lollipops or balloons. We do have agreements with several Internet Service Providers. If you're using NETCOM, MindSpring or WinNET, opening an account with Security First means free online time. Read the links for details.

By the way, if you don't think that Internet banking with SFNB is the securest, most efficient, economical way to bank on the Internet . . . then you can close your account at no cost to you. SFNB has made opening, managing, and even closing your account, should you choose.

We appreciate that banking on the Internet is a new and major change, no matter how technically savvy you are. We are committed to making this change as painless as possible by, for example, offering the cost free approach outlined above. You may even want to keep your old account open while testing the benefits of SFNB. Once you realize the benefits of SFNB, we think you will close your old account.

How do you make money?

We make money because our business model is far more efficient than traditional banking models. We have a "footprint" that spans the entire U.S. through the Internet. Yet all our Internet operations are located in Atlanta along with our banking office in Pineville, Kentucky. A traditional bank would need to have fully staffed branches all over the country to achieve the same reach. As a result, our operating costs are far lower than a traditional bank and we can pass the savings onto our customers.

Subject to regulatory approval, we plan to offer brokerage, insurance, loans, and other financial services. Although we intend to generate fee revenue for these services, we anticipate the fees will still be lower than what is competitively available to you. Because our costs are lower, everyone benefits.



"Sounds too good to be true," grumbles Skeptical Ed.

*It is not too good to be true. We're a **real** bank, doing **real bank things**. We're just located mostly on the Internet.*

What else will SFNB offer? Credit cards, business accounts, money market accounts?

Money Market accounts and certificates of deposit are available now. We plan to offer credit cards and more in the next couple of months. Commercial accounts are under development too. In the next 6-12 months we will provide a "net worth solution" that encompasses all your financial needs on one screen. You will be able to get financial advice, trade through a broker, buy insurance, and much more.

Can I contact someone if I have more questions?

Absolutely. Customer service representatives are available 24 hours a day, 7 days a week, 52 weeks a year. You can e-mail them at comments@sfnb.com or call 1-800-SFNB-321 (1-800-736-2321) and press 0.

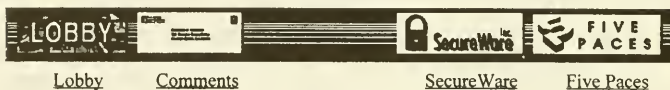


"Any time of the day or night?" asks Skeptical Ed.

We have live customer service representatives on duty at **all** times. We figure that if you want to bank at 3am on a Saturday, you ought to be able to get help at 3am on a Saturday.

"Wow."

'Wow', indeed.



II.

Internet Banking White Paper



Internet Banking White Paper

September 6, 1995

1. Why Home Banking?
2. Why the PC is a natural for consumers?
3. The Internet is here to stay.
4. The Revenue and Cost Benefits for Banks.
5. The additional fee revenue banks can gain with "Open" computer banking models
6. Open computer models allow banks to have a direct relationship with customers.
7. The benefits of a flexible end-user interface.
8. Long term implications of a short term outlook.
9. Putting it all together.

Why Home Banking?

Consumers are demanding home banking

At Five Paces, we believe that some form of home banking is inevitable. Americans are working harder and have less time for driving to the bank and waiting in teller lines. In one survey cited by Ernst and Young (Technology in Banking Report), eighty-two percent of 18- to 34-year-olds polled preferred banks with 24-hour service.

What does convenience mean? Convenience in banking means being able to pay bills, check account balances and buy financial services any time of day, from any location. To get this convenience, Americans have turned to non-branch venues. Statistics show that ATMs, telephone banking and computer based banking account for over fifty percent of all banking transactions today. Total non-branch activity is growing at 15% a year.

Why the PC is a natural for consumers?

We believe that there are two important factors driving Americans to use computers for home banking. First and foremost, many of us are already comfortable with computers. During 1994, Americans bought more computers than televisions sets. We use them at work, our children use them in school and many of us already use them to balance our checkbooks.

The Internet is here to stay.

A second factor driving computer based home banking is explosive growth of the Internet. Thanks to the introduction of browsers in 1994, users can now click on text and pictures to navigate through the World Wide Web. This technology, combined with media hype and technologies enabling secure transactions, has led to a boom in corporate interest. Since the beginning of 1995, most Fortune 500 companies have established Home Pages and have given their employees Internet access. During the same period, on-line providers like CompuServe, Prodigy and American Online incorporated browsers to provide Internet access. A number of companies are working on providing Internet access via cable TV lines. In short, the Internet is here to stay and is a natural new distribution channel for banks.

The revenue and cost benefits for banks.

Virtually all computer banking models enable consumers to conduct transactions on-line instead of in brick and mortar branches. This will lead to reduced teller workload, which could mean lower branch costs. At the same time, consumers will be communicating with the bank on-line, which can reduce postage and administrative expense. Over time, account statements could be eliminated.

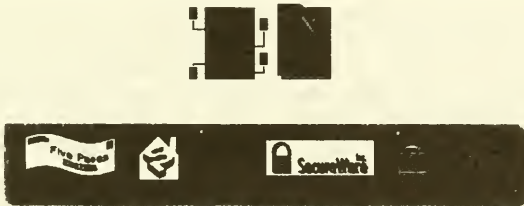
There are also two ways banks can increase revenues with computer based banking. The first is tied to timing. Banks adopting this technology early can differentiate themselves in the marketplace. Computer based banking can lure a very desirable consumer segment to banks and/or convince a highly attractive customer to stay.

The additional fee revenue banks can gain with "Open" computer banking models

The second way banks can increase revenues with computer based banking is tied to the kind of computer based banking model banks choose. We believe that banks should control the user interface or the screens that end-users see. Besides enabling banks to create a custom feel, a flexible user interface allows banks to broker additional financial services. We believe that an open model enables banks to earn significant fees by intermediating for other financial service providers.

We refer to the flexibility of the user interface as a banking model's "openness." The computer banking models that exist today can be placed along an openness spectrum.

At the least flexible end of the spectrum is personal financial management (PFM) software offered by Intuit (Quicken) and Microsoft (Money). We classify this software as closed or least flexible because Banks have very little control over how this interface looks or what this interface offers. Bank customers or end-users install this software on their personal computer and communicate with the Bank through it. Since neither Intuit nor Microsoft make the software code for their programs publicly available, they control the kinds of transactions end-users make and with whom these transactions occur. Bank systems must be configured to communicate with PFM software.



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Comments to webmaster@fivepaces.com



White Papers
Five Pages Home

Internet Banking White Paper

September 6, 1995

1. Why Home Banking?
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4. The Revenue and Cost Benefits for Banks.
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6. Open computer models allow banks to have a direct relationship with customers.
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9. Putting it all together.

Open computer models allow banks to have a direct relationship with customers.

There are three kinds of open models currently available. Licensed personal financial management software like Managing your Money (MYM) is considered fairly open because MYM's owners, NationsBank and BankAmerica, will make the source code for MYM available so that banks can tailor the interface and add services as they wish. In all other respects, this software operates much like Quicken and Money.

When banks develop and maintain their own personal financial management software, they have even more control over the user interface. We refer to this computer banking model as "Home Grown." These banks require customers to install bank software on their PC's and dial directly into the bank to download data and conduct transactions. The bank software operates much like personal financial management software: customers dial into the bank, download data, run programs that reside on their computer and occasionally send a batch of requests to the bank such as transfers or payments. If a customer downloads data from multiple sources (such as a bank, a credit card provider and a brokerage provider), the customer has to plug this data in to the appropriate places in the software.

We believe that the most open banking model involves contacting the bank directly and interactively via a publicly available Internet Browser. This model differs significantly from traditional PC banking (and the "Home Grown" model) because customers use an Internet browser to view account data that resides on Bank computers. This kind of banking involves a continuous, interactive session. End-users choose whether or not to download information to their PCs; they can view it and leave their own PCs uncluttered if they wish. In fact, the bank server can integrate information from different providers so that the customer obtains an integrated financial picture.

The Benefits of a Flexible End-user Interface

All three open models maintain the bank's direct relationship with consumers. This relationship can be strengthened by creating a unique "lobby." It can also be strengthened by the addition of new financial services. In fact, we believe that banks can strengthen their ties to consumers by selling more services and making it more difficult for customers to switch. By brokering new financial services, banks can become one-stop shops for upscale customers. Most important, they can significantly increase fee income.

Long Term Implications of a Short Term Outlook:

If banks choose to offer home banking via personal financial management software, we believe they lose control over the end-user interface and the relationship they have with customers. This loss of control has tremendous long term implications.

Thanks to the fall of Glass-Steagall, Banks are now able to offer a wider variety of financial services. However, if they choose to let a software publisher control the relationship between them and end-users, software publishers can determine which business partners Banks choose. In fact, a savvy brokerage provider would rather negotiate with a PFM software publisher than a bank. Signing a deal with Microsoft would mean that the processor would gain access to all Bank1, Bank2, and Bank3 end-users. Signing a deal with Bank1 would mean that the processor would only have access to Bank1 's customers.

We believe that computer industry history offers compelling proof of the importance of a direct relationship with consumers. In the mid-1980's, IBM decided that operating systems were not central to IBM business strategy. As a result, IBM licensed DOS from a small software company called Microsoft. IBM called this operating system PC-DOS and allowed Microsoft to market this same operating system to competing computer manufacturers under the name of MS-DOS. IBM's seal of approval made DOS an industry standard. However, IBM was unable to move the industry to a new operating system called OS/2 in the late 1980s. Microsoft controlled the customer relationship and was able to convert most end-users to Windows.

Putting it all Together

Maximizing openness maximizes bank opportunities. With this in mind, we believe that banks should ask three questions when evaluating banking models.

How do customers access my bank?

Customers should be able to log into the bank from any location and any computer. This openness allows potential new retail, corporate, and international customers to wander in. Joining a proprietary on-line service limits access to new customers and curbs the flexibility of existing customers.

How can I extend the end-user interface to provide additional services?

If Bank customers (end-users) install personal financial management software on their PCs, these customers become direct customers of software publishers. By controlling the software code behind these programs, publishers control the kinds of transactions end-users make and with whom these transactions occur.

By maintaining a direct relationship with end-users, banks can offer additional services and provide a personal feel to the interface - without seeking the cooperation of a software publisher.

Can my customer connect directly with my bank?

Can customers interact directly with the bank? Or do they have to transmit transactions and messages in batches via personal financial management software? A browser based bank enables an interactive relationship. Since the screens end-users see reside at the bank, banks can update data and content as frequently as needed.



III.

Security First Network Bank
Security Architecture



SECURITY



■ Overview

Exploring the Internet; the growth of electronic commerce.

■ Security Architecture

A look at the technology employed by Security First to keep your money safe and secure.

■ Security Reference List

Our hotlist of sites for facts, products or services related to Internet security.

■ A Closer Look At SFNB's Security Architecture

Our white paper on Security First's approach to Internet security issues.

Overview

In the late 1960s, the U.S. Department of Defense began to put together the communications network that we now know as the Internet, an infrastructure made up of thousands of networks connecting through common routers.

Originally the exclusive domain of government and academic personnel, the Internet has become increasingly popular among the computer-literate public in recent years. The key to this boom in interest is the Browser, a software program that allows point-and-click navigation around the Internet. Browsers replaced traditional UNIX commands with colorful graphics and audio/video capabilities. Hypertext links encourage "surfing" from one site to another.

Now, in addition to being a communications tool, the Internet has become a global marketplace with an endless variety of goods and services available at the click of the mouse. Among the commercial enterprises expressing interest in Internet commerce are banks, seeking ways to improve service and make financial transactions more convenient for customers.

Security First Network Bank is leading the way in Internet banking services, and one reason for its outstanding performance is its serious approach to security. To establish a secure platform for financial commerce, Security First turned to Five Paces, Inc., a company dedicated to providing finance software and security measures for the banking industry. Working through an affiliation with SecureWare, Inc., Five Paces has equipped Security First with a protected environment using measures previously available only to government agencies.

Security Architecture

Across the Internet

Security First utilizes several layers of technology to ensure the confidentiality of its transactions across the Internet. Security begins with your browser. Netscape's SSL protocol (Secure Sockets Layer) is used to provide privacy for the data flowing between the browser and the bank server. SSL is an open protocol for securing data communication across computer networks, and it provides a secure channel for data transmission through its encryption capabilities. It allows for the transfer of digitally signed certificates for authentication procedures, and provides message integrity, ensuring that the data can't be altered en route.

When a customer account is created, the bank assigns a password which is sent to the customer along with an account verification letter. In addition to password protection, Security First also provides server authentication using the latest in public key cryptography.

Public/private key pairs are used specifically for authentication. The public key can be distributed, using

a certificate that verifies the identity of the owner. The private key is kept secret. A message encrypted with a public key can only be read after decryption with the private key.

To start a transaction, the customer uses his or her browser to send a secure message via SSL to the bank. The bank responds by sending a certificate which contains the bank's public key. The browser authenticates the certificate, then generates a session key which is used to encrypt data traveling between the customer's browser and the bank server. The session key is encrypted using the bank's public key, and sent back to the bank. The bank decrypts this message using its private key, and then uses the session key for the remainder of the communication.

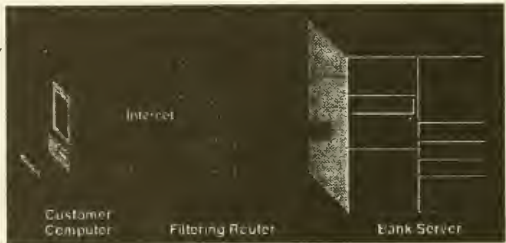
By exchanging messages using the public/private key pair, the customer can be assured they are actually communicating with the bank, and not a third party trying to intercept the transaction.

When a session is encrypted, the key icon at the lower left corner of the browser's screen becomes solid, and a blue line appears at the top of the screen. If the key icon appears broken, encryption is not in use and the current session is not secure.

Filtering Routers and Firewalls

Security First has gone to great lengths to ensure that your money and personal data are protected against any type of intruder or attack.

The bank is protected by a system of filtering routers and firewalls, which form a barrier between the outside Internet and the internal bank network. The filtering router verifies the source and destination of each network packet, and determines whether or not to let the packet through. Access is denied if the packet is not directed at a specific, available service.



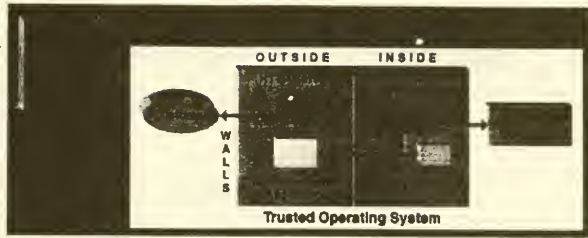
The firewall is used to shield the bank's customer service network from the Internet. All incoming IP traffic is actually addressed to the firewall, which is designed to allow only e-mail into the customer service environment. Traffic through the firewall is subjected to a special proxy process which operates in much the same way as a filtering router, verifying the source and destination of each information packet. The proxy then changes the IP address of the packet to deliver it to the appropriate site within the customer service network. In this way, all inside addresses are protected from outside access, and the structure of the bank's internal networks is invisible to outside observers.



Trusted Operating System

While there are important security issues associated with transit across the Internet, the greatest risk to your financial information occurs within the bank itself. Security First addresses this issue using SecureWare's SecureWeb platform. An important part of this architecture is the Trusted Operating System, the dominant security platform in government computing. Security First's use of this trusted operating system, called CMW+, represents the first commercial implementation of this highly successful platform, used for years by the Department of Defense and other high-security government agencies.

The trusted operating system acts as a "virtual vault," protecting customer information and funds inside the bank. It uses multilevel technology and contains privilege and authorization mechanisms to control access to functions and commands. It also contains an audit mechanism which records logins and logouts, use of privilege, access violations and unsuccessful network connections. This allows quick identification of any suspicious activity.



Internal Controls

Strict internal procedures are in place within Security First, controlling every aspect of bank administration from training employees to confirming customer transactions to preventing service interruptions.

New advances in security technology are happening daily, and Security First is constantly evaluating its security architecture to ensure that it provides the highest level of privacy and safety for bank customers. For more information about the bank's security architecture and plans for future releases, see the white paper titled, "[A Closer Look At SFNB's Security Architecture.](#)"

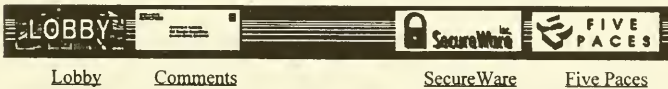
Customer Responsibility

Customers have their own set of responsibilities in providing security for their Internet bank account. Passwords *must* be kept secret. Users should make sure that no one is physically watching as passwords are entered. It is important to remember to exit the browser when leaving the computer. If the PC is left unattended with the browser running and a valid user name and password cached, anyone can gain access to the account. Users should also take precautions to keep computers clean and free from viruses that could be used to capture password keystrokes.

Security Reference List

The following is a list of sites you can browse for additional information concerning Internet Security.

- ☐ [SecureWare, Inc.](#)
- ☐ [Netscape Security, General](#)
- ☐ [Netscape on SSL](#)
- ☐ [The SSL Protocol](#)
- ☐ [Using RSA Public Key Cryptography](#)
- ☐ [RSA Data Security, Inc. -- FAQ](#)



Lobby

Comments

SecureWare

Five Paces

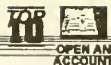
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IV.

Internet Security White Paper



SECURITY ISSUES



A Closer Look at SFNB's Security Architecture

- **Introduction**
- **Security First Network Bank**
 - **Trusted Operating System**
 - **Firewalls and Filtering Routers**
- **Traveling the Internet**
 - **Public Key Cryptography**
- **Security Threats and Counter Measures**
 - **Spoofing Network Address**
 - **Spoofing User Identity**
 - **Attacks on the Web Server**
 - **Trojan Horses**
 - **Internal Attacks**
- **Conclusion**
- **Frequently Asked Questions**

Introduction

Security First Network Bank is the first banking organization approved by government regulators to make its financial services available on the Internet. The "virtual" bank" allows customers with accounts to use their World Wide Web browser to transfer funds, schedule payments, write electronic checks, reconcile their statements -- in short, provides all the services of a regular bank, 24 hours a day, 365 days a year.

Two important business relationships have helped make the Internet bank a reality. Five Paces, Inc. is an Atlanta-based company specializing in providing financial software and security measures to the banking industry. SecureWare, Inc. is an affiliated organization that produces security-enhanced system software for IBM's AIX, Hewlett-Packard's HP-UX and SCO UNIX among others, as well as commercial security products on a number of platforms. Drawing on the expertise of these industry leaders, Security First has put together a unique security architecture to meet the security requirements of the on-line bank.

Technologies for security on the Internet are improving almost daily. New procedures are constantly being tested, refined and approved for implementation. Security First's security architecture combines the latest in electronic commerce technology, trusted operating system technology and firewall technology to protect the bank from the threats an on-line service might encounter.

This area will keep you up to date on Security First's techniques and future plans for protecting your money and financial data. First we will review the security structures surrounding the actual Bank, then discuss the developing technologies for encrypting customer's financial and personal data as it travels across the Internet.

Security First Network Bank

Security First Network Bank is made up of two distinct parts. The first is the *Information Server*, the area potential customers use to learn about the bank and its services. Once a customer decides to open an account, he or she uses a secure registration form to send an encrypted message to the *Bank Server*,

which contains the actual banking applications.

Using information provided on the registration form, the bank verifies the account information and creates a new account for the customer. An account creation package, containing the user name and password needed to access the account, is sent to the customer through the U.S. Mail. This package may eventually include a personal authentication device such as a smart card, or floppy disk containing an encrypted private key and certificate.

Customers communicate with the bank using their WWW browser. Each transaction a customer sends to the bank is encrypted to protect the information as it travels over the network. The bank server receives the transaction, decrypts the message and performs the service requested.

Security First also has a full staff of customer service representatives who have read-only access to the bank database. Users can e-mail a representative for help in balancing their accounts, checking on posted payments and other questions.

Trusted Operating System

The Bank Server runs on a Trusted Operating System, called CMW+. Security First is the first commercial application of trusted operating system technology. Developed as a multilevel security platform for government installations by SecureWare, Inc., CMW+ provides a hierarchy of authorizations and privileges that protect the system's functions from outside interference.

The Trusted Operating System replaces the concept of the *root* account in a traditional UNIX system with a *privilege mechanism* that allows individuals much less power and access than the *root* user identity. The system has explicit rules for granting privileges to specific processes. Those privileges provide the foundation for an *authorization mechanism* that controls user access to system functions.

The authorization mechanism limits a user's actions to the commands for which they have been authorized. Unrecognized users or unfamiliar applications are not granted privileges, and therefore cannot gain access. In comparison, a user running the *root* identity in a traditional UNIX environment would have access to all the programs within the system.

An *information separation mechanism* within the trusted operating system creates a wall between the network environment and the internal bank applications. The network receives the user's requests and validates their identity. A trusted forwarding application then routes the request to the internal bank environment, where it is processed and then passed back.

Because of this separation, nothing in the outside environment can touch the banking functions. Further, no outside processes can disrupt the internal operations of the bank. This protects the bank against any security breach occurring within the web server.

The final benefit of the CMW+ system is its *audit mechanism*. The system records all suspicious activity, including the use of privilege, access violations, logins, logouts and unsuccessful network connections. This provides accountability for all internal procedures as well as attempted break-ins.

Firewalls and Filtering Routers

Further protection from intruders exists in Security First's system of firewalls and filtering routers. Each presents an additional barrier between the Internet and the internal bank network.

Filtering routers are used to verify the source and destination of each information packet sent to the bank, and filter out all packets not addressed to specific network services. The filtering router eliminates any outside packets with an inside source address, to prevent outside users from trying to masquerade as internal sources. The only traffic that is allowed to the Bank Server is HTTPS traffic.

Firewalls work in a similar way, examining each packet of information that is sent across the Internet to

the customer service network. The purpose of the firewall is to protect the bank's internal network from outside observation. All traffic to the firewall is filtered through an e-mail proxy, which verifies the source and destination of each information packet, and eliminates any with suspicious attachments or subject lines. The proxy then changes the IP address of the packet to deliver it to the appropriate site within the internal network. This protects inside addresses from outside access.

Traveling The Internet

Security First utilizes several layers of technology to ensure the confidentiality of its transactions across the Internet. Security begins with your browser. Netscape's SSL protocol (Secure Sockets Layer) is used to provide privacy for the data flowing between the browser and the bank server. SSL is an open protocol for securing data communication across computer networks. SSL provides a secure channel for data transmission through its encryption capabilities. It allows transfer of certificates for authentication procedures, and provides message integrity, insuring that the data can't be altered en route.

Public Key Cryptography

Security First is using SSL to implement the rapidly emerging technology of public key cryptography , used for client and server authentication. As soon as it is readily available, this added level of security will be included in all bank transactions over the Internet.

It is important to note that there is no risk in transmitting information before this proposed increase in security. The protection provided by SSL is sufficient to ensure confidentiality of your financial and personal data. Password violations do tend to increase over time, as the perpetrators have more opportunity to observe the workings of the network and customers lose or otherwise compromise their passwords. For this reason, you will frequently see security procedures being added to the bank's applications as new technologies become available.

Under public key cryptography, the bank will issue its customers a public/private key pair. The public key is a distributed number, the private key is known only to its owner. Messages encrypted using the public key can only be decrypted with the private key.

Key pairs are the perfect mechanism for mutual authentication , that is, each participant in a transaction can verify the identity of the other before proceeding. Customers can be certain they are transmitting information to the bank and not a malicious third party. At the same time, the bank is assured that the data it receives is from an authorized customer, not an intruder looking for a way to break in.

The bank will provide a Certificate Authority which issues each authorized user a public key certificate. This certificate associates the user's identity with their public key.

To begin a transaction, the customer uses his or her browser to send a secure message via SSL to the bank. The bank responds by sending a certificate containing the bank's public key. The browser authenticates the certificate, then generates a new message containing the customer's public key, which is encrypted with the bank's public key. The bank uses its private key to decrypt this message, and sends its response to the customer encrypted with the customer's public key. The browser uses the customer's private key to decrypt this message. In this way, the customer and the bank can each authenticate the identity of the other. At this point, the browser generates a random session, or symmetric key, and encrypts it using the bank's public key. The bank uses its private key to decrypt the symmetric key. The symmetric key is then used to encrypt all other data transferred in the current session. Session keys are unique for each communication with Security First, reducing the risk of anyone breaking into the transaction.

Security Threats and Counter-Measures

Security First developers have spent many hours identifying the types of attacks that could be mounted against the bank. Here's a quick look at the mechanisms already in place to prevent such attacks.

Network Address Spoofing

An intruder might try to break into the bank application by pretending to be an administrator or customer service representative. In other words, by attempting to send data packets which appear to come from an inside machine. This type of attack would be foiled by the filtering router, which drops "outside" packets with an "inside" source address.

User Identity Spoofing

No one can pretend to be a customer of Security First. All customer identities and passwords are kept in a database on the bank server. Inaccurate passwords or unrecognized identities are denied access to the bank. Because the password is sent encrypted by SSL, the transaction is safe as long as the customer has taken the proper precautions to ensure the secrecy of his own password.

Another avenue someone could try is to break into the bank's database and alter or add customer passwords. Because the database resides at a high level within the trusted operating system, a traditional UNIX file access mechanism, would not have the privileges necessary to reach the internal database.

Attacks on the HTTP Server

HTTP server software has been subjected to a variety of publicized attacks. To guard against bugs in the server, Security First has taken measures to protect against software errors. Therefore, the server environment is severely restricted. It will run in a *chroot* environment, with a powerless user identity that can only create files in that environment. The server's only privilege allows it to bind to the Internet port associated with the SSL protocol. It is allowed no other actions within the trusted operating system.

In a traditional UNIX system, only the *root* user has the ability to bind to port. With the trusted operating system, the server can be given the bind to port privilege without the unlimited access of a UNIX *root* id.

The task of the HTTP Server is to receive and examine incoming SSL requests, then invoke the trusted forwarding application, which passes the request to the bank application within the trusted operating system. The actual bank application is separated from the server through the information separation mechanism of the trusted operating system, and should be only minimally affected, if at all, by disruptions in the server software.

Trojan Horses

A common attack against network platforms is to replace network services with software that allows an intruder to subvert the machine on which the service is running. With the trusted operating system, the damage this type of rogue program can cause is minimal. First, the filtering router eliminates all but SSL-protected HTTP traffic. The HTTP server also examines each information packet before calling the trusted forwarding application to send the request to the bank. Any packet containing HTML code that could be used to run malicious programs is eliminated during these steps. Even if it were not, it would run in the non-privileged *chroot* environment, unable to affect any system processes.

Traffic to customer service machines is limited by the firewall to e-mail only, reducing the chance than an unauthorized program could be introduced to the system by that route. The customer service machines will also utilize *Troy*, another program in SecureWare's security arsenal. Troy provides security against worms, trojan horses and viruses by associating cryptographic checksums with authorized programs. With Troy in operation, no unauthorized programs can be installed or run.

Internal Attacks

To secure customer information and funds against internal attacks, Security First will use HannaH, a

security technology designed and implemented by SecureWare, Inc.

HannaH provides a strong measure of protection against any such attacks. Internal users, such as the customer service representatives, must authenticate their identity each time they log in to the system by passing their cryptographic certificate to the server. All transactions are documented by the trusted operating system. The customer service machines will also be running Troy, so that no unauthorized software can be added to a machine, and no code can be introduced using the floppy drive.

Conclusion

The safety of your personal and financial data is of utmost importance to Security First. Through the expertise of [Five Paces, Inc.](#) and [SecureWare, Inc.](#), we have achieved levels of data protection never before used in a commercial operation. You can be sure that as Internet security technologies evolve, Security First will continue to test, evaluate and implement those that might be of benefit to our customers.

Frequently Asked Questions

Why is this approach any stronger than running a Web server in a *chroot* environment on a regular UNIX system?

The *chroot* system call protects against access to the file system. However, many UNIX resources, such as sockets, shared memory segments, messages queues, semaphores and processes (as signal targets) are accessible outside the file system. In addition, some system resources, including the system disks themselves, are accessible through device files that can appear anywhere in the file system.

If a process were to become *root* in a *chroot* environment on a traditional UNIX system, that process could:

- connect to any socket-based network service, either locally or remotely
- create a device node addressing the system disks or any other hardware or software device
- create or access any shared memory segment, semaphore or message queue on the system
- send a signal to any process in the system
- create a device node for kernel memory and modify the running version of the operating system

The trusted operating system used by Security First's Bank Server segregates system resources into separate categories. Applications running with the "outside" category cannot access any resources in the "inside" category. System and other configuration files that are not globally readable are stored in a special "system" category that is not visible. Only the trusted forwarding application crosses the boundary between "outside" and "inside."

Another weakness of the *chroot* environment is that you can see into it from the outside. That is, the directory that is the top of the *chroot* environment appears in the file system somewhere, which allows malicious code outside the environment to manipulate files inside the environment. If a user were to break into the system, that user could replace data or programs in the *chroot* environment.

Security First has combined the information separation and *chroot* mechanisms to prevent applications running elsewhere on the machine from manipulating the outside environment. This prevents:

- internal attacks against the Bank Server
- accidental changes made by unauthorized administrators
- importing viruses and Trojan Horses from outside sources into the internal environment

The most important feature of the trusted operating system that protects better than a traditional

UNIX system is the privilege mechanism. In a traditional UNIX environment, the system gives the power to access system calls and override all system controls to any process that has a user ID of *root*. A common attack is to dupe the system into creating a process with a user ID of *root*, which then perpetrates the attack.

In contrast, the trusted operating system grants specific privileges to each type of override in a mechanism separate from the user ID. In fact, the user name *root* on a trusted system is specifically set up to be an unprivileged account, so most normal attacks that attempt to gain *root* privileges only gain access to a regular user account with no specific rights.

The granting of privileges on the trusted operating system is severely restricted. The only outside program allowed even a minimal set of privileges is the trusted forwarding application, which raises and lowers the privileges it needs to cross the partition only around the code that specifically needs it. No other outside program has access to any privileges.

Can the UNIX permission bit mechanism be used to enforce the outside/inside architecture? Why is the additional information separation mechanism needed?

The system could be configured so that there are two designated user ID groups. The trusted program would run with an effective user/group ID of *outside* and would have the privilege that allows it to communicate with a program on the inside, running with an effective user/group ID of *inside*.

There are a number of risks to this approach. First, all programs must be written carefully to make sure that only the user or group permissions are set, and the public permission bits are always off. This is subject to administrator error if the administrators use UNIX commands to manipulate files. Second, the permission bit mechanism is subject to the all-powerful *root* identity. Once the user has created a *root* process, all the data on the system is accessible.

Unlike UNIX permission bits, the trusted operating system's information separation mechanism is *not under the control of a user process*. A process running within one information category cannot access data in another category. Commands running in one category are restricted to files in that category.

Could the UNIX "set user ID on execution" (SUID) mechanism be used instead of the trusted operating system's privilege mechanism to implement the trusted programs on the Bank Server?

The UNIX SUID mechanism allows a program to run under a different user identity than that of the program that invoked it. For example, if a user is running under a specific user ID and invoked a SUID program whose owner was *root*, the program's effective user ID would be set to *root* when that program was run. Such a program could check an "authorization list" of users allowed to invoke it and approximate the authorization mechanism of the trusted operating system.

This approach is vulnerable to a number of attacks that are not possible on the trusted operating system. First, if a program is to perform a trusted function, it must be SUID to the *root* user ID. This gives it much more power and capability for damage than a program that is restricted to a small group of essential privileges. Second, all programs run by a SUID program have the same effective ID as that program. For instance, sub-programs such as shell escapes executed from SUID *root* programs have the effective ID of *root* as well. The trusted operating system recomputes a process' privileges when it executes another program. Privileges cannot be inherited.

Why is HannaH technology being used for customer service representatives and system administration?

Insider attacks can be just as damaging as outsider break-ins. It is important to have limits on the harm that can be caused by disgruntled employees or careless administrators. In a traditional UNIX system, users log in as *root* to perform most system administration tasks. As *root*, a user

can view or modify any data on the system. Security First has taken strong steps to prevent *root* access.

All users will be identified and strongly authenticated at login time to establish their role as customer service representative or administrator. In addition, if we suspect network sniffer attacks that could disclose customer information, HannaH gives us the ability to encrypt all information, even when passing over the local bank network. HannaH provides these security services for all network applications because it resides "in the network stack" and all applications that use TCP must go through HannaH first.

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V.

Security First Network Bank
in the News

COMMUNICATIONS WEEK

A CMP PUBLICATION

THE ESSENTIAL FINANCIAL TECHNOLOGY SOURCE

DECEMBER 4, 1995

InteractiveAge

A Communications Week Supplement and Interactive Communities

FINANCE ON THE WEB

Banks, brokerages open for business

Most banking and brokerage firms now use their World Wide Web sites as virtual storefronts. Now, however, actually conducting business on the Web.

Today, nine financial institutions are offering some type of transaction via their sites (see chart). The top five include discount stock brokers, regional banks and a virtual bank. It's not hard to understand the Web appeal for financial institutions: millions of potential customers, reduced costs and a Web audience with money to spend and invest.

To attract these users, financial Web sites will be forced to offer services that only can be delivered electronically. Examples of such services are Security First Network Bank's online bank statements

hyperlink of web pages that can be accessed from a single point of access, like a home page.

Customers typically make transactions through the Web by logging on to a secure site, authenticating themselves and then making the transaction.

Security First Network Bank, a virtual bank, is the first to offer a complete range of services via the Web. Although it's not clear if it's offering anything new, it is a complete solution to offering almost everything that can be done on the Web.

In the long run, the real winner may be Mountain View, Calif.-based Netscape Communications Corp. All the sites on the list require Netscape Navigator 3.0 or later, so the more secure transactions not had for a company that's selling its browser to more than a year.

Steve Cohen



41 SECURITY FIRST NETWORK BANK 9.3

The virtual bank, owned by Adams-on-Wall Bancshares Inc., lets users perform online banking transactions. It's the Web banking site, the clear winner. Not only can users open accounts and pay bills, but Security First lets them track and manage their spending. Hyperlinked statements and reports can be pulled up to review expenses by category. Bookkeeping on any item, users can see when their "checks" clear. Reserving bills can be paid automatically each month.

The Security First site lets browsers take a complete tour of its services and has a FAQ (frequently asked questions) section for new customers' questions and a section on banking security on the Internet. The many features that let users access and make their spending better, the site to be copied, but until then Security First is clearly the banking leader on the Web.

HOW THEY WON

The sites reviewed are financial institutions that currently allow transactions on their Web sites. The sites were rated based on four criteria, with content being the most heavily weighted.

Depth and display of online services available. Does the site offer proprietary information, and does it give users reasons to return?

Logical organization. Is the structure of the site intuitive? How easy is it for users to find the information they need and to use the service?

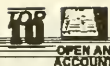
Letting the user choose the presentation by offering a connection to related information. Can users jump to the next area without going back to the top?

Use of graphics. Does the art capture the look and feel of the organization without slowing users down?

Reviews were written by Stuart Giddell, a free-lance writer based in New York. stuartgiddell@panix.com.



NEWS INDEX



Our most recent news coverage is indexed here by issue date. Recent press releases can also be found on this page.

Recent Press Releases and Announcements:

(updated as of December 31, 1995)

Security First - Press Release, December 3, 1995

"Five Paces Offers Internet Banking Breakthrough"

Security First - Press Release, December 1, 1995

"America's First Internet Bank Celebrates Customer 1000 and a Smithsonian Nomination"

Security First - Press Release, October 25, 1995

"Security First Customers Bank on the Internet as Intuit Upgrades PC Financial Software"

Security First - Announcement, October 16, 1995

"Security First Opening Accounts at Internet World '95"

Security First - Press Release, October 6, 1995

"America's First Bank on the Internet, Security First Network Bank, Goes On-line October 18"

Security First - Press Release, July 24, 1995

"Five Paces, Netscape Team to Offer Secure On-line Banking"

Office Of Thrift Supervision - Press Release, May 10, 1995

"Kentucky Thrift Given Authority To Offer Services Over The Internet"

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(updated as of December 31, 1995)

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[Comments](#)

[SecureWare](#)

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Statement

of

Coley Clark

Corporate Vice President and Group Executive
Financial Industry Group
EDS

on

The Future of Money

before the

Subcommittee on Domestic and International Monetary Policy
Committee on Banking and Financial Services
House of Representatives
Washington, D.C.

March 7, 1996

Mr. Chairman, distinguished members of the Subcommittee, my name is Coley Clark and I represent EDS, a global information technology services company. It is a privilege to offer the Subcommittee my company's perspective on the future of money and the payments system.

At the outset, I would like to applaud the Subcommittee for its efforts to better understand the technologies underlying electronic commerce. I am particularly encouraged by your willingness to hear the diverse views of various industry participants—banks and technology companies alike—who are driving electronic commerce.

By way of qualification, I would like to take a minute to tell you about my company, not only to explain the kinds of services EDS provides in general, but also to describe the services we offer the banking industry related to electronic commerce.

EDS is a professional services company whose expertise is in applying information technology to improve the business performance of our customers. Put more simply, EDS designs, develops, integrates, and manages computer and communications systems for businesses and governments around the world.

It is important to note that EDS is a services company. We do not manufacture hardware or sell packaged software. We provide systems integration and transaction processing services to customers in all major industries—communications, manufacturing, retail, energy, transportation, and financial services. And we have been providing these services since 1962.

Last year EDS reported \$12.4 billion in revenues. Fourteen percent of that amount, or more than \$1.7 billion, was in support of the global financial services industry, a share of the market that includes more than 5,500 financial service firms, representing every kind of financial services provider, banks and nonbanks alike. As an EDS corporate vice president with executive oversight for EDS' Financial Industry Group, I am responsible for managing this part of the company's business portfolio.

Because of our range of services to the financial industry, EDS has a unique perspective on the effects of technology on the payments system. We provide transaction processing services that span the scope of the payments system—from checks, credit and debit cards, and ATMs, to electronic check presentment, electronic settlement, stored-value cards and cross-border exchange. We are also currently supporting customer initiatives related to the Internet.

Consequently, we have a critical stake in the direction of electronic commerce and, ultimately, the proposition of electronic money. My company, like many of the companies that have addressed this Subcommittee, will have an active role in influencing and shaping the ways all financial services providers pursue and deploy new on-line technologies for their customers.

The emergence of these new technologies, however, will not change EDS' "bank-centric" approach to our services. EDS is, and will continue to be, a behind-the-scenes facilitator of technology services for banks and other financial service providers, who in turn offer these services to consumers.

As the evolution of on-line commerce continues, we will work in concert with hardware and software manufacturers to support banks' electronic commerce strategies.

* * * * *

Any discussion of the future of electronic commerce should be prefaced with a caveat. There is a lot of hype surrounding the subject, which can make it difficult to separate fact from fiction. Judging from frequently exaggerated reports in the media, combined with Wall Street's heady response in the past several months to anything related to the Internet, it would seem that the brave new world of on-line commerce is, in fact, already a reality.

More important, while it is undoubtedly true that the advent of electronic payments mechanisms is affecting the payments system and will continue to have an impact on banks, I am not convinced that these innovations will have an adverse effect upon banks or their role in the payments system. On

the contrary, I believe these innovations are no more or less than another step in the natural evolution of the payments system, an evolution that historically banks have influenced and will continue to influence in a positive way.

With all the talk about the pending on-line revolution, it may be time to pause for a moment and look at the issue from a more detached perspective—to take a “virtual reality check,” if you will, based on an appreciation of the banking industry’s response to technological advances in both delivery and payments throughout recent history.

From my perspective, the era of on-line commerce is in its early stages. It will likely take years—maybe a decade or more—before on-line commerce becomes a primary method for consumer banking. With regard to banks, it is clear that they have generally embraced, and often led the development of, innovations in the payments system; that banks today are a leading change agent in electronic service delivery; and that banks and their role in the payments system will not particularly be advantaged or disadvantaged by current changes in electronic commerce.

* * * * *

The first point I would like to make about the future of electronic money and the payments system is concerned with the Internet phenomenon. The Internet’s business potential is a relatively new discussion. But now, with the advent of the World Wide Web, everyone is scrambling to develop their Internet strategies. More often than not, these strategies involve conducting electronic transactions. For banks, it means enabling customers to do Internet transactions at their convenience, regardless of location or time or technical platform.

But despite current wisdom to the contrary, the Internet is no more a part of the payments system than is, say, Home Depot or Macy’s. It is simply another merchant location. Where you present a credit card, whether in cyberspace or at the local mall, is irrelevant. What is relevant is the method of payment. And the advent of alternative payment mechanisms such as smart cards and

electronic cash does not change the payment method. The underlying system is the same. And that system is primarily controlled by banks. So, to imply that the Internet itself is a threat to banks' hold on the payments system is misleading.

Which is not to say that the Internet itself is irrelevant. On the contrary, its global reach and open design afford financial service firms an unprecedented marketing vehicle, creating a whole new way of communicating and exchanging information with end-consumers.

But it is the future that the Internet represents. Through it we get a glimpse of what the era of on-line commerce will hold. Most certainly, it provides all of us with an idea of what the opportunities and the challenges will be. For now, the major issue surrounding the Internet is security. It is an issue for financial service providers, merchants, and consumers alike. And it will be increasingly important for banks and technology companies together to devote time and energy into making Internet transactions more secure before electronic commerce can be successfully conducted on the Internet.

* * * * *

Which brings me to my second point: The market—that is, the consumer—is key to the success of electronic commerce and electronic money. And I believe it may be too early to know the pace and extent of consumer acceptance. Look at consumer behavior historically.

Twenty-five years ago, industry “experts” were predicting the extinction of checks by the 1990s—the so-called checkless society. Instead, we have seen check volumes continue to rise, albeit not at the same growth rates as in the past. (Ironically, the majority of home banking bill payment systems—both PC-based and phone-based—are not truly electronic since in most cases those payments are ultimately fulfilled with checks written by home banking vendors.)

Consumer acceptance was also slow to develop in early electronic commerce initiatives. Many people were skeptical about direct deposit when it was first

available. It took consumers 20 years to get accustomed to using ATMs. Point of sale has been slow to take off. Banking by PC is hardly a new idea—it was introduced in the mid-80s and virtually ignored by consumers.

Despite the much-publicized hunger that consumers have for new ways to explore and use their PCs to do electronic banking, current demand for these capabilities is still relatively low. In fact, only 1 percent of the 100 million U.S. households have signed up for home banking services.

True, consumer behavior is changing and will probably change faster as the Nintendo generation comes of age. But we still have a way to go.

* * * * *

My final point concerns banks and their role in this emerging world of electronic commerce.

Historically, banks, because of their central role in the payments system, have been at the vanguard of electronic commerce—by providing credit cards, debit cards, telephone bill paying, and, more recently, PC-based home banking. And judging from the amount of time, effort, and money banks have recently invested in alternative delivery strategies, there is every reason to believe that they will continue to be a leading influencer.

However, their position is no longer guaranteed. I believe banks would be the first to admit that they no longer have a monopoly on the payments system. Just as banks found a way to enter new markets despite Glass-Steagall, so too have nonbanks, like AT&T and Sears, successfully provided consumers with access to the payments system by issuing credit cards and thereby further eroding banks' traditional market. And the recent telecommunications reform measure stands to bring on a whole new set of competitors. But I do not think this increased competition is necessarily a bad thing for banks—or their customers.

The competitive landscape has changed, leaving banks with two options. They can consider the new pressures as an affront to their traditional business

and expend their energy attempting to redraw the lines that once separated banking services from other industries. Or, they can see these changes as an opportunity to redefine themselves, to create a new banking model, and to take a leadership position that secures their central role in the payments system of the future. And I think we are seeing indisputable evidence that banks are pursuing the second option and responding proactively to the market.

The truth is, electronic commerce, and correspondingly, electronic money, offer banks and technology companies—and anyone else who is interested—a tremendous opportunity. But the brightest opportunity lies not in what any of these players can do alone but in what we can all do together.

The leaders in the banking industry recognize the need for cooperation. NationsBank chairman Hugh McColl proposed just that in his keynote address at last year's Retail Delivery Systems Conference. "I can envision," McColl said, "a partnership with banks with a strong technology partner, building its own channel, its own financial services highway. A highway that provides all the benefits [banks] will need to win in the era of electronic commerce."

Mr. McColl was advocating increased cooperation between banks themselves in electronic commerce initiatives. But I believe the proposition can be expanded to include technology companies as well. We play a significant role in developing and integrating these systems and in many cases are partnering with banks to build new delivery channels. It is going to take the combined expertise and abilities of banks and technology companies alike to see electronic commerce become an actual reality rather than merely a virtual reality.

* * * * *

In conclusion, I would like to commend the Subcommittee for its foresight in anticipating the issues surrounding the increasing role of electronic commerce in the payments system. I would add, however, that it is important that we separate fact from fiction, reality from hyperbole. And that we call on

the entire industry—banks and technology companies alike—to address these issues together. I would also like to thank you for the opportunity to participate in this discussion because many of the issues surrounding today's topic -- privacy, security, and integrity of electronic transactions -- are as central to our industry as they are to financial services. I look forward to participating in the dialogue as it moves forward. I would now be happy to answer your questions.

TESTIMONY OF

JEROME F. PAGE
GENERAL COUNSEL AND VICE PRESIDENT, BUSINESS DEVELOPMENT
MTA CARD COMPANY

Before The

SUBCOMMITTEE ON DOMESTIC AND INTERNATIONAL MONETARY POLICY

of the

COMMITTEE ON BANKING AND FINANCIAL SERVICES

of the

U.S. HOUSE OF REPRESENTATIVES

March 7, 1996

Mr. Chairman and Members of the Subcommittee, it is an honor to be invited to appear before you.

I am Jerome Page, General Counsel and Vice President, Business Development of MTA Card Company, a subsidiary of the New York Metropolitan Transportation Authority. MTA is the largest transportation agency in the US and through its subsidiaries and affiliates operates the NY City subway and public bus system, the Long Island Railroad and Metro-North commuter rail systems and 9 tolled intrastate bridges and tunnels. These facilities serve 4 million customers each workday.

We are at the beginning of a new generation of electronic cash initiatives whose scope and reach will extend to most areas of our economy. These new systems and processes have tremendous promise but also raise novel and important policy issues. I will discuss some of these issues as they have arisen in the context of MTA's experiences in the planning and implementation of its stored value farecard network.

In 1994 MTA began operation of an automated fare collection system that is based on a plastic card with a magnetic stripe. The MetroCard is either swiped through a reader at subway stations or dipped into a farebox on buses where the fare, in the form of electronic cash, is decremented. All 3,600 buses are now operational. The full complement of 467 subway stations will be operational by mid-1997. By 1999, we anticipate in excess of 1.2 billion electronic fare collection transactions a year on MTA's subway and bus properties. We will also process close to 200 million fare sales transactions a year.

MTA has made a considerable investment in this electronic cash network and has been engaged in an active and ongoing effort to identify new and innovative ways to leverage this investment to achieve additional operating efficiencies and value. For example, many commuters in the New York area use two or three different mass transit systems to get to and from work. Each of these systems bears the expense of maintaining their own proprietary network. In addition, the customer ends up having to manage two or three different fare media and make two or three times as many fare purchase transactions. New regional electronic cash initiatives, including those that support a migration from magnetic stripe to smartcard technology, may make it possible to cost effectively implement a common regionwide transportation fare payment instrument that will link together all of the transit providers in our region.

We also believe that there is a real opportunity for governmental service providers such as MTA to save significant operating expenses, enhance customer convenience, and, possibly, obtain an ongoing revenue stream by participating early on in the development of a regional multi-application stored value network.

Based on this premise, MTA began investigating the feasibility of using the MetroCard on the 4,000 public payphones located in our facilities. This led us to consideration of the viability of a regionwide open system stored value network in which our card would be used in a multitude of low dollar amount cash-based transactions such as taxis, parking meters and lots, vending machines, fast food restaurants, newsstands, laundromats, etc. We were aware of numerous pilots and small scale open system implementations in Europe, Asia, and Australia, as well as the initiatives that were on the drawing boards at the international bankcard associations and other financial institutions.

In basic policy terms, we felt that we had two options. The first option was to stand on the sidelines and wait for the marketplace to evolve to a point where the stored value product was fully established before we committed to utilization of the new technologies and processes. This option was rejected because we felt that within the New York City region MTA had the power to drive the evolution of the stored value business and we wanted to make sure that it evolved in a way that best served the interests of our stakeholders, namely our transit customers and our taxpayers.

The second option, which was the one chosen, was to initiate a competitive process to create a joint venture with private sector partners to develop a proprietary stored value network for the New York region. It is contemplated that this electronic cash product will be placed on smartcards issued directly by the joint venture as well as on smartcards issued by banks and other financial institutions that choose to participate. Value would

be loaded onto the card in a number of ways such as: at automated teller machines (ATMs); at automated vending machines in the subway system; at retail merchant point-of-sale terminals; at home PCs or set-top boxes through home banking networks; and at payphones. Value would be decremented at any location that accepted the card as payment for goods or services, including transit properties.

Over the last two and a half years MTA has been involved in a venture development process. In addition to the hurdles associated with developing a business partnership based on a new product in a highly competitive and evolving marketplace, we face the challenge of creating a joint venture between public and private sector entities. We are in the final stages of the negotiation process with a prospective partner and should know whether we will be able to come to the successful conclusion of a deal in the next month or so.

From MTA's experience implementing a closed fare collection system and our efforts to migrate to an open multi-application network, we have been able to identify many of the factors that will drive the evolution of the stored value business. In some cases these factors are not fully resolved and in other cases they are not even fully understood. The major drivers of any stored value business case include consumer and merchant behavior, the extent of the competition in particular markets, pricing vis-à-vis alternative payment options and technological advancements. In addition, there are a number of policy issues that must be addressed by the industry as well as the legislative and regulatory community.

In prior testimony, you have heard several witnesses describe the range of relevant issues, including ensuring macroeconomic stability, maintaining consumer confidence by ensuring the soundness and solvency of the obligors, protecting privacy, promoting technology standardization, minimizing opportunities for criminal activities such as counterfeiting and money-laundering, encouraging competition, and ensuring access to services by all segments of our society. Below I discuss four specific issues as they arise in the context of MTA's experiences.

Privacy.

Each MetroCard we sell has a unique serial number. The time and place of every entry into the transit system is actually logged against the serial number. Although MetroCards purchased with cash are anonymous, we intend to offer the option of purchasing or reloading value on MetroCards with a credit or debit card. We will then have the technological capability, but not the intention, to link a particular MetroCard to an individual. By extension, this capability would enable us to track an individual

customer's travel behavior.

The gravity of the privacy issue expands dramatically when the stored value card has multiple applications. One of the important attributes of cash transactions is their anonymity. Are consumers going to insist upon maintaining the absolute anonymity of stored value transactions -- and thus forego the convenience of loading value through means that link the card serial number, and thus subsequent transactions, to an individual? Are consumers going to accept stored value products that physically reside on, and are linked to, their credit or debit card? Are stored value card issuers and networks going to want to, or be able to, convince consumers that their privacy will be maintained even though there is a technological capability to tie electronic cash transactions to an individual? Will legislation and regulation be proposed in this area? I don't think anyone knows the answers to these questions but how the privacy issues are addressed will be an important component in defining the future dimensions of the stored value product.

A related issue MTA has faced as we define the potential market for multi-application cards is that many merchants who exclusively handle low-dollar-amount cash transactions are not enthusiastic about the idea of participating for the first time in a payments network that comes with a paper trail.

Serving All Segments of our Society.

Another area that deserves attention is whether the benefits of the advances in electronic cash and commerce initiatives will extend to all segments of our society. This issue has particular relevance in the context of MTA's efforts. Our ridership base is extremely diverse. Our research indicates that more than 25% of our subway and bus customers do not have depository account relationships with financial institutions. Furthermore, a significant percentage of our customers with banking relationships do not have or use credit and debit cards. This fact raises some difficult policy issues. Obviously, to the extent that financial institutions focus their delivery of a stored value product solely on their deposit account customers, they have limited interest in serving this "unbanked" population.

For example, banks appear to be quite willing to pay for the cost of a smartcard distributed to their customers as part of an account relationship. If the perception is that "banked" customers are getting their card for free, is it fair for MTA to charge the \$5 cost of a smartcard to that segment of our customer population who don't have this banking relationship? Does the answer change if the only way to take advantage of special fare options such as frequent use discounts or intermodal transfers is with a smartcard? Or if the only way to get access into the subway system is with a smartcard?

A similar set of issues is raised in the context of loading value on cards. Is it fair for the banked population to have multiple convenient ways to load value on their cards such as at ATMs and from home PCs while the unbanked are relegated to cash to card transactions in the subway station?

We believe that we have come up with solutions that meet MTA's governmental service obligations while also meeting our partners' need to operate a profitable business and maximize their shareholders' value.

Technology Standardization and Achieving the Goals of Convenience and Efficiency.

Another challenge that faces all electronic commerce initiatives is the extent to which they will actually succeed in the objective of making the consumer's payment experiences easier and more convenient. There is a real risk that in the near-term the consumer will end up having to manage multiple stored value cards with limited or exclusive applications. For example, in the New York region, it is quite possible that in a couple of years a consumer will have to carry separate stored value cards for each of the following applications: getting onto MTA subways and buses; accessing the PATH service between New Jersey and New York; using EZ Pass gates on the region's tolled bridges, tunnels and highways; using public telephones; using municipal parking; paying for goods and services in a general retail environment; and paying for xeroxing and vending in the City University campus network. The time when all of these functions can reside on a single standardized card is a long way into the future.

One of the issues that is being addressed by the industry is what technology best serves particular functions. MTA currently uses a proprietary magnetic based technology in the MetroCard system. However, we have concluded that the security and functionality requirements of an open system will require migration to smartcard technology.

Although there has been substantial agreement on standards for smartcard interoperability in the financial services industry, particular applications may have needs that force utilization of non-standard products. For example, the ideal product in the transit environment is a card that communicates with the entry gate without physical contact. The advantages of this interface include reduced maintenance costs, higher reliability and added customer convenience given the fact that customers can keep the card in a wallet or purse and the fare is automatically decremented when they walk by a reader. A number of variations of that product exist today. However, current versions of contactless technology are not compatible with the technology being adopted by the financial services industry. At MTA, we are faced with some difficult tradeoffs as we ponder the

technological migration to smartcards. We have to decide between the contactless/proximity interface that functions better in transit -- versus the contact interface that appears likely to become ubiquitous in the financial services industry and, thus, will have broader utility and acceptance. It is also possible that technological developments will enable both interfaces to exist on a single card.

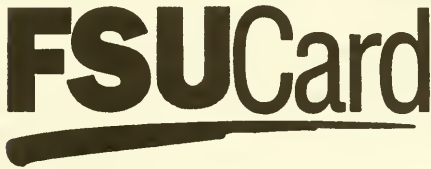
The Role of Governmental Service Providers.

A final issue to bring to your attention is the importance of the role of governmental service providers in the development of new electronic cash and commerce initiatives. In many cases, governmental service providers control high volume applications and large captive customer pools. Examples include the many different social service and entitlement programs that can be administered through electronic benefit transfer networks; campus card programs at major state university systems; toll bridges, roads and tunnels; transit systems; airport facilities; municipal parking facilities; etc. The governmental entities in control of these functions will have to decide what role they will play as these new technologies and processes emerge.

In connection with our effort to establish a joint venture, MTA has been a first-hand observer of the financial services industry at its creative best as it addresses the complex issue of how to make money implementing stored value networks. In the end there needs to be a coherent value proposition to all participants, including the networks, the issuers, the merchants and the consumers. Innovation will be best served at this stage in the evolution of the stored value market by ensuring competition on a level playing field among all of the participants, including banks, processors, network integrators, technology providers and telecommunications companies. In this regard, it is a time for legislative and regulatory vigilance but the need for intervention appears to be premature.

In the context of governmental entities such as MTA, there are additional policy considerations that must be folded into the evaluation of participation in new electronic cash opportunities. It is important that governmental service providers not be passive, particularly in markets where they are a critical application. We have a significant contribution to make during this period of innovation and testing as the shape of the future of electronic cash is forged.

***CARD APPLICATION
TECHNOLOGY CENTER***



Florida State University

**Bill Norwood
Executive Director**

Florida State University's FSUCard A MultiPurpose Identification Card

Introduction

At Florida State University we have been developing and improving the student identification card since 1985. Numerous companies and technologies have been reviewed and implemented in an effort to add functionality to the FSUCard.

The success of the project is due to the attention focused on how the university ID card could become smart enough to provide the focal point for improved and new card related services--services including administrative and academic, financial and informational, security and access. To date, this has been accomplished via the interfacing of magnetic stripe technology with mainframes, personal computers and hand held systems. Currently, the final preparations for the deployment of integrated circuit cards, or smart cards, are being made.

The ramifications of the financial capabilities of the FSUCard have been impressive. The campus, in many ways a microcosm of the larger society, has proven a fertile testing ground for innovative electronic commerce. Success on several fronts has led to Florida State's position as a leader in the evolving nature of transaction processing and card-based commerce.

Background

The FSUCard in use today relies on interaction with various software applications and hardware components, essentially providing a comprehensive point of integration. We have long considered the FSUCard a smart card, though not a chip card. While great innovations have been made in the utilization of magnetic stripe technology for advanced applications, the overall potential has been limited due to inadequate storage capacity and certain processing restrictions.

From the card's inception, the need for timely information regarding a card holder's university status was apparent. If the card was to facilitate the envisioned concept of an all-inclusive "One-Card", new functionality was needed. Magnetic stripe ID systems led us to believe that the technology could accomplish these goals, yet the course for a true one-card system was uncharted. Initial concerns included new hardware and system costs, existing hardware and system obsolescence, staffing considerations, and a lack of magnetic stripe ID card standardization resulting in an unacceptable level of vendor dependence.

The chip card technology reviewed during this early period (1989-91) was both encouraging and discouraging--encouraging because of the tremendous potential of the chip to maintain true security of stored information and its processing capabilities; discouraging because of the high cost of the technology and the lack of supportive applications. It was determined that this--like any new technology--was worth little without the benefit of practical applications.

Thus, in the beginning, the marketplace left us with a simple decision: utilize and expand the fairly broad range of applications available for magnetic stripe technology, or choose the more expensive chip card technology that offered few applications and limited hardware. The decision was made to use magnetic stripe technology with a standard bank encoding scheme, which allowed for a choice of vendors--and the ability to change vendors in the future--rather than a single proprietary system.

This decision proved key to the financial success of the FSUCard, as the adoption of the American Bankers Association (ABA) encoding scheme--a revolutionary break from traditional student ID card methodology--enabled cards to be accepted in the vast, nationwide banking networks.

Old Problems/New Approach

The goal quickly became apparent: If the best available and most affordable technology is magnetic stripe, how do you make magnetic stripe technology appear to be smart? Our answer was to first take our host-based applications and enable the card to interact with those systems in multiple ways.

Examples include the utilization of student self inquiry terminals to facilitate unattended service delivery, hand held readers to gather take attendance or certify eligibility, and interfaces with housing and security files to control access to dorms and labs. Such processes left cardholders with the impression that the FSUCard was doing the work when, in reality, other systems were activated or called by the card to make the decisions. Administrative offices quickly envisioned innovative ways to use the card in the day-to-day operations in their respective areas.

FSUCard financial capabilities

Many of the traditional problems faced by the university when attempting to automate revolve around financial transaction processing. Payment of fees, tuition,

financial aid and cash collection campus-wide all present challenging issues and opportunities.

Typically, these processes result in costs for the institution. FSU envisioned a scenario where such costs could be avoided or even converted to revenue generating processes. The answer was to allow the card to have true financial processing capabilities like a bank card and to incorporate a prepaid value component to the system.

This foresight has resulted in the FSUCard leading the institutional market in the financial applications arena. A brief description of the system and resulting benefits follows.

The FSUCard delivers to its partner banking institution a potential 40,000 accounts with tens of millions of dollars in annual deposits. All parties benefit from the relationship. The university profits and receives a superior level of service, the cardholders pay reduced rates with increased convenience, and the bank benefits via the massive increase in account holders--both students and merchants catering to students. The university and its banking partner share in the processing fees collected from each point of sale and ATM transaction, and each receives a share of the interest accrued from account deposits.

Among students the debit component of the card is known as the "electronic checkbook." Designed to keep students out of financial trouble and ease the minds of parents and merchants, the card eliminates the potential of bounced checks, electronically authorizing each debit transaction through the banking partner. The card does not require students to keep a minimum balance, they are not subject to costly service charges, and there is no danger of the student falling into a credit "trap" when they may not have an income to support it. In a sense, the card has been introducing students to a prepaid methodology--common in other countries but quite foreign to U.S. students accustomed to a credit-based system.

The stored-value component of the card--what the students refer to as the vending stripe--further exemplifies this win-win-win philosophy. The key is a second magnetic stripe (to be replaced by a microchip in the summer of 1996) on the back of the card which allows students to prepay for soft drinks, copies, laundry facilities, and other services. Money can be transferred to the stripe at any of sixty machines around campus. The FSUCard can then be inserted into a retrofitted, traditionally coin-operated machine and the transaction debited from the stripe.

In 1994, more than \$600,000 was deposited onto FSUCards--and each year the amount has been growing. 1995 was no exception, placing the figure upwards of

\$900,000, with nearly 6 million transactions. The university receives interest income from the float on this money and returns a portion of this to students in the form of reduced prices at vending machines for those using the card. The students benefit from the convenience of this payment option, reduced prices for using the card in certain locations, and the safety of not carrying cash. Even the vending interests benefit from a reduction in cash "shrinkage" and a reduced rate of vandalism, down nearly 30 percent in 1995.

Expanded banking functions have improved aspects of university life for all campus populations. To avoid long lines which plague the students every semester, individuals are given the option to have their tuition payment electronically deducted from their FSUCard account. Faculty and staff enjoy payroll deductions deposited to the card, allowing a flexible payment method for on- and off-campus dining and retailing facilities. Students enjoy the payroll deposit capability, eliminating the need to pick up checks and travel to the bank for depositing.

A milestone for higher education was achieved in the fall of 1995 at FSU, when for the first time, financial aid was electronically deposited to a university ID card account. More than 85% of incoming freshman and nearly 60% of continuing students opted to avoid waiting in disbursement lines and use the electronic funds transfer option. During the initial distribution for the fall term, nearly \$10,000,000 in federal financial aid money entered the FSUCard system. About 40% of that money was transferred to the university as tuition payments, leaving almost \$6,000,000 in disposable student income. Merchants who had previously avoided accepting the card as a payment method lined up to take advantage of this huge influx of dollars.

Projections for the academic year 1995-96 indicate that nearly \$50,000,000 dollars will flow through the card. Early results suggest that these projections are on track as \$14,000,000 in financial aid flowed into the accounts in the month of February alone. This has continued to prove the value of the partnership between the University and the financial institution and the rewards of that combined effort.

Other FSUCard capabilities

A range of other functions has been incorporated into the card. Examples of these capabilities include:

Long distance calling card - Adding long distance calling card capability to the FSUCard proved to be invaluable as it provided additional service to the cardholders while

generating revenue to help defray operational costs. Additionally, the University has taken advantage of the voice messaging capabilities of the FSUCards' telecommunication platform to deliver administrative voice messages including notification of financial aid availability and grade availability. This delivery is more reliable than mail and is less expensive.

Security/Access - Many housing, academic, and lab facilities utilize card-driven access control.

Market Research - Useful demographic information is being collected about the purchase of various products from vending machines, who uses the recreational facilities, etc. This information presents a tremendous benefit to those faced with the task of better managing ever-limited resources, and deploying products and services that better meet the needs of the cardholders.

Paying for tomorrow's technology

Funding new projects or technologies in higher education is one of the most significant challenges in educational administration today. Convincing a university to invest in the FSUCard technology, install card readers, purchase security system, etc., would have been difficult without the identified new revenue sources described above.

A precedent has been set with the card program: Advancements are encouraged, but they must be self-supporting. While our migration to chip card technology will enable the FSUCard to achieve new levels of service, it has had to wait until the time that the costs could be justified. We believe that the time is now.

The Future is Upon Us

As previously mentioned, the FSUCard is entering the next stage in its' evolution as it will accommodate a microprocessor chip in the summer of 1996. The capabilities of this chip are considerable, but will focus on the superior levels of security inherent within the chip and how that will facilitate secure transactions in a variety of new and existing areas.

One major facet of this new chip card will be an enhanced stored value technology allowing secure, off-line transactions to occur both on and off-campus. Another will be

the ability to secure transactions and sessions over the Internet, World Wide Web, and other public networks. Finally, these two will be combined to deliver a secure means of paying for goods and services over these networks.

Summary

The FSUCard experience has provided cost-effective solutions for traditional and non-traditional university obstacles, while at the same time, offering tremendous opportunities in both future problem solving and revenue growth. Students have readily embraced the evolving financial aspects of the card, furthering the university's willingness to innovate. In the current campus environment--where shrinking state and federal funding are not matching the rise in enrollment--only the innovators can survive.

Bill R. Norwood
Executive Director
Card Application Technology Center
Florida State University

Testimony of Professor James L. Brown

Director, Center for Consumer Affairs

University of Wisconsin -- Milwaukee

before the

Subcommittee on Domestic and International

Monetary Policy of the

Committee on Banking and Financial Services

US House of Representatives

Washington DC

March 7, 1996

regarding

Consumer Implications of Electronic Banking and Commerce

Understanding the impacts of the evolving nature of money for consumers requires an appreciation of a number of factors and considerations, among them:

- consumer expectations, needs, and desires regarding the means for storing and transferring value;
- the goals of financial services institutions, together with their changing natures and practices;
- the consolidating structure of the traditional components of the industry;
- the concurrent emergence and entrance of numerous nontraditional purveyors of services; and,
- the tension inherent in the newly applied technologies -- which enable so many of the advanced financial services and delivery means now coming on line on the one hand, and engender the disconnectedness which these technologies create in the minds and actions of so many consumers on the other.

I welcome the opportunity to attempt to marshall my thoughts on these and related issues.

Typically, the new, evolving forms in which value is and will be reflected and exchanged involve the intersection between basic telecommunications and computer-based data processing technologies. The combination of these technologies to provide electronic banking services is similar to that when the EFT Act was passed in 1978. As such, it is thus especially pertinent to recall the underlying purpose of the Electronic Funds Transfer Act:

"The Congress finds that the use of electronic systems to transfer funds provides the potential for substantial benefits to consumers. However, due to the unique characteristics of such systems, the application of existing consumer protection legislation is unclear, leaving the rights and liabilities of consumers, financial institutions, and intermediaries in electronic fund transfers undefined.

It is the purpose [of the EFT Act] ... to provide a basic framework establishing the rights, liabilities, and responsibilities of participants in electronic fund transfer systems. The primary objective..., however, is the provision of individual consumer rights."¹ (emphasis supplied)

¹ 15 USC 1693

It is also critical to recall that existing law specifically anticipates the evolving nature of this industry. In the EFT Act, the Federal Reserve Board is explicitly charged with:

"...prescrib[ing] regulations ... [which] take into account, and allow for, the continuing evolution of electronic banking services and the technology utilized in such services...."²

Note that the statutory formulation seemingly envisions several forms which electronic banking might take: "...the unique characteristics of such systems..."; "...the continuing evolution of such systems...." ibid. It is critical to recognize that electronic banking clearly will take (as it already has taken) numerous forms. And further, that due to the dramatic differences between and among these various formats, it is likely that distinct legal/regulatory structures will be desirable.³

Thus, the notion of increasingly electronicized commerce is not unanticipated. What's new, however, are the implications of the application of previously unimagined combinations of these technologies and formats to consumer financial functioning. The key then is to assess these combinations individually so as to devise appropriate responses to each.

For example, the EFT Act was founded, among other things, upon the notion of transfer into or out of an 'account'. When written, this Act envisioned a traditional depository account, located in a financial institution, of the kind familiar to most. Yet, today, emerging technologies may have rendered the traditional notion of a consumer 'account' unduly limiting as a basis for holding consumer wealth, as for example, in the cases of Electronic Benefits Transfer mechanisms, or payments through the Internet. As such, it may thus be necessary to revisit this notion in order to provide the ongoing oversight of emerging combinations through the Federal Reserve envisioned in the EFT Act.

Much recent attention paid electronic banking has been relatively prosaic: for example, whether or not 'smart cards' are encompassed wholly or in part by the existing EFT Act. What seems pertinent for this set of hearings, however, is a recognition that the several different forms of 'electronic banking' or 'electronic commerce' are likely to require new, distinctive sets of rules governing them.

² 15 USC 1693b

³ This admonition, of course, simply envisions different legal structures for different systems, as has been the case with, for example, different requirements for checks, open-end credit, other than open-end credit, debit in its several forms, etc.

There seems little ultimately to be gained by attempting to liken 'smart cards' or other emerging formats, to other, more familiar forms of value transfer. While such an endeavor might reveal aspects similar to checks, or credit cards, or debit cards, or whatever, the crucial point is that they -- like most new and unfamiliar forms of value transfer -- also are unlike each of these other models in many crucial characteristics. Thus, they are presumably deserving, even demanding, of differing sets of rules governing rights, responsibilities and liabilities among participants.

CONSUMERS AND THEIR MONEY

It is crucial that rules be established for these mechanisms and systems, precisely because of the unique role that money plays in the life of consumers.

Money involves and embodies the basic wherewithal by which consumers function as consumers. In significant part, being a consumer necessarily involves the transfer of money. Accordingly, the interests of consumers in the nature of money are fundamental, and their attitudes about it are directly informed by a recognition of how crucial money is to them. The very essence of functioning as a consumer involves at least one, and as many as three distinct steps: 1) contemplating a transaction; 2) performing that transaction where desired; and 3) when necessary or desired, amending or otherwise remediating that transaction when contemplated results are not achieved.

Money, in whatever form, is the very medium by which step (2) is facilitated in virtually every case (other than barter).⁴ Without money, it would be effectively impossible to function as a consumer as that term has come to be understood in the modern world. For consumers simply to be consumers then, the importance of money to them cannot be overstated.

Historically, money has necessarily involved an aspect or component which *reassures* consumers. To be widely accepted, (i.e. ultimately valued) by consumers,

⁴ Many 'transactions' involve the creation of *an obligation* which gives rise to the contemplated *future* transference of money rather than the actual transference of value at or near the time of the transaction for goods or services, e.g., credit card purchases. However, for most so-called 'credit' cards, the interweaving of purchase capability (the so-called 'convenience user who never truly 'borrows' against the line of credit) renders the two indistinguishable for this purpose. That actual settlement is subsequent is immaterial in the minds of most consumers (some might say too many!) for purposes of 'performing' a transaction.

whatever form money has taken has always required engendering a widespread recognition -- mutual between prospective payors and payees'-- of the value inherent *in the medium itself*. Thus, for money to be useful to consumers, it must be widely recognizable as possessing value.

Most typically, this has been accomplished through various means *reassuring* consumers that money is in fact *reliable as a store of value*, and as such, can subsequently be relatively easily exchanged to obtain desired goods, services, or future consideration. It is this function of money -- its use as a *store of value* -- that makes this consumer demand for reassurance especially pronounced when it comes to money as compared with other items. To be accepted then, either the physical form of money or its issuer must be reliable.

Money is, of course, intrinsically symbolic. Value could be stored in the form of material items, e.g., crops, cars or cucumbers. The difficulties, however, in converting these physical items into other desired items or services are obvious. Consumers can see a car or a pair of shoes or any material thing as possessing value -- that's inherent in the fact that it's material. Money on the other hand, generally lacks this material quality, and as such, must somehow provide assurance to consumers of its inherent worth in other less obvious, more amorphous ways . Since it involves symbolism, money has generally involved psychological overtones for consumers.

Viewed in this sense, it is unsurprising then that money originally was represented by items widely revered as being *inherently valuable*, for example, salt or grains. The obvious shortcomings of such clearly valuable physical commodities as a medium of exchange, however, were, first, that ownership could not easily be particularized, i.e., it could easily be stolen and converted; and, second, that its physical bulk involved enormous costs in its transference, thereby posing economic (i.e., cost) limitations on its utility for facilitating exchange.

Coins of widely-valued precious metals were an improvement in that they could reflect larger values within physically manageable sizes. However, they did not solve the underlying shortcomings regarding the need to identify (and to secure value to) a unique owner nor the desire to transfer value across distances at economically practical costs.

The emergence of paper drafts represented an enormous step forward in facilitating the tasks of transferring value to facilitate commercial transactions. However, these drafts were really nothing more than *promises* to provide coin (or other widely accepted symbols for value) upon presentment at a specific place. Their acceptability was still dependent on the mutual recognition and acceptance by both prospective buyer and seller of their reliability *as a store of value*. (Recall the gold standard for exchange, for example, underlying various drafts.)

While consumers have clearly evolved a long way toward accepting and utilizing paper representations of value, that acceptance is still tempered with a skepticism, witness the many typical consumer transactions reflecting the still fragile nature of consumer attitudes (and those of the businesses they deal with) toward paper representations of value and their uses in transferring it: certified checks for buying cars, homes, of other large-ticket items; merchant demands for personal identification -- addresses, phone numbers, credit card numbers, etc. -- when accepting consumer checks, etc.

As money itself became less immediately recognizable as inherently valuable, the reliability of its issuer ascended in importance as a means of reassuring consumers. To this end, the emergence of Federal Reserve notes reflected a quantum leap forward by invoking explicitly claims against the reliability of the federal government. Even so, the existence of sub-par clearance of bank drafts literally into the 1960s reflects the protracted task of engendering consumer acceptance of paper reflecting nothing (literally) more than a promise to pay or redeem.

The emergence of the technologies of modern data processing and telecommunications-based transference of routine data culminated in a natural, inevitable marriage in electronic funds transfer systems. The transporting of electronic 'blips' as money was at least as great an improvement in reducing the costs of consumer financial services as was progressing from moving coins of gold and silver to transporting pieces of paper.

Once the network was in place, the marginal cost of moving a 'blip' across town or across the country was so small as to be almost unmeasurable. And, further, the amount represented by that 'blip' was independent of the cost of moving it from point A to point B; the costs of actually 'moving' \$10 in such a form were generally the same as 'moving' \$1,000,000.

Throughout this evolution of the physical manifestations of money, however, the needs and wants of consumers have not changed fundamentally:

Consumers have always needed to accept the notion that the value transported remains subject to their control; or, in the alternative, that they incur little or no risk exposure from its transport should the transaction go awry -- either in the form of loss, or in the form of difficulty in recovering their worth.

Hence, different laws have evolved which seek to facilitate the economic advantages of using ever more cost-effective means of transferring value while simultaneously seeking to reassure prospective participants -- consumers, businesses, and government alike -- that they will in fact accomplish the

transactions they intend and not seriously jeopardize their wealth in doing so.

Thus, for example, the law provides that consumers generally will not lose any money in a checking account when the bank pays a draft over a forged signature or endorsement (in the UCC); or, that consumers won't incur large liabilities when their credit cards are lost or stolen and used in an unauthorized manner (in the Fair Credit Billing Act); or, that a thief using an EFT card can't do much damage to a consumer's account balance as the consumer's liability is limited (in the EFT Act), etc.⁵

Note also that these laws are designed in such a manner generally as to place liabilities for system malfunctions on those parties best positioned to anticipate (and thereby prevent) difficulties. It clearly makes sense to presume that such parties are best placed to design transfer systems to anticipate and ameliorate potential problems. Asking a consumer to accept liability for malfunctions occurring in a system he or she has little or no capacity to design or control (or even, in some instances, understand) is fundamentally unfair, especially if he or she is not given adequate explanation, and where necessary instruction, in the mechanics and potential pitfalls of any new transfer system.⁶

The notion of reassurance -- both as an educational vehicle and as a psychological reinforcer -- has thus been a constant and a critical factor in the evolving nature of money. This is unlikely to change, since human nature and consumer expectations have not been shown to be appreciably different now. This becomes especially important in the emerging electronic environment where physical reassurance becomes ever more problematic.

⁵ Indeed, the very notion of federal insurance of deposit accounts can be viewed in much this same sense as regards consumer reassurance: consumers providing their funds to depository institutions will be reimbursed ("the full faith and credit of the United States government") should the institution fail. Clearly, the most important letter in FDIC is 'F'.

⁶ Frankly, expecting consumers to accept such potential liability, based upon the assumption that they have freely, knowingly and intelligently elected to do so, is equally fraught with potential pitfalls, witness, for example, the outrage over the misunderstood (deceptive?) selling of *uninsured investments* by otherwise federally-insured depositories in the late 1980s and early 1990s.

THE EMERGING ENVIRONMENT

What consumers want then, regarding their financial functioning, is reassurance. And, as discussed below, reassurance as regards money most fundamentally involves control.

Reassurance is particularly important in an era when consumers are as skeptical and cynical as many are today. On the one hand, they are increasingly being bombarded with marketing and other blandishments extolling their expanding range of options and their ability to pick and choose among them, i.e., the 'sovereign consumer' notion. Yet, their actual consumer experiences often are simultaneously telling them they are losing control, as regards their abilities to get providers to respond to or otherwise accommodate their wishes.⁷

The very nature of many of the emerging electronic technologies to provide financial services is such that their relative advantages -- speed and cost-effectiveness of transfer -- are founded upon forms that intrinsically do not -- indeed, cannot -- offer reassurance in physical forms that consumers take (or at least *have* taken) much comfort from. As such, both marketing considerations and the applicable legal standards have often evolved to attempt to provide such reassurance via other means.

Relatively primitive use of electronic technologies to facilitate basic financial transactions (for example, cash withdrawals from ATMs or direct deposit of payroll or government benefits) has generally been accompanied by features -- in this case mandated legislatively -- consistent with and reflective of the above-mentioned notions:

- 1) Transactions are to be accompanied by physical receipts (or, at least, the option of receiving such receipt) or transaction advices which serve at least 2 important functions in reassuring consumers:
 - a. immediate confirmation of the accuracy of the intended transaction as directed, e.g., \$100 -- not \$200 -- was withdrawn from a checking account; and,
 - b. physical indication which tacitly (even if not necessarily legally) could be relied upon by the consumer in the event of subsequent

⁷ This phenomenon hasn't gone unnoticed in the national press. For example, the March 11 edition of Business Week, features in its cover story, an article on "Economic Anxiety," citing, among other things, notions of "stagnant wages, income inequality, political scapegoating, and corporate insensitivity."

dispute regarding the particulars of the transaction.⁸

- 2) **Periodic recapitulations** of activity are provided, to confirm the accuracy of the transactions directed, as well as the overall status of the consumer's account.

Transaction technologies will make money and the process of transferring it ever less physically tangible. This will, of course, facilitate the transference of the totems of worth on ever more cost-effective terms. In turn, this will enhance consumer choices, options, opportunities, and ultimately, benefits. However, the very fact of diminishing tangibility will disconcert many consumers. Marketers know this, and in responsible providers, will seek to accommodate these perceived needs.⁹

Unfortunately, however, not all providers can be characterized as "responsible", especially given the attractiveness to the occasional unscrupulous provider of such huge amounts of wealth as is held by consumers. As such, then, the ultimate task for government is striking the balance between harnessing the competitive forces of the emerging markets to protect consumers' basic needs and imposing the legal forces of the law to the same end, without unduly hindering the evolution of potentially beneficial new systems.

Striking such a balance certainly involves an immensely complex set of questions. Moreover, it will occur in an environment in which many purveyors of the new electronic technologies are philosophically opposed to any regulatory involvement. More than one commentator has described the emerging electronic environment as a modern version of 'the Wild West'. Contrast this environment -- call it Dodge City -- with the environment which consumers have traditionally

⁸ This does not suggest that such physical indicia as receipts need always be provided in newer forms of electronic banking. The option for the consumer to elect to obtain such a receipt, as mentioned, seems to reflect a reasonable balancing between cost-efficiency and reassurance of the transactor.

⁹ By way of example, the Metro system here in Washington physically prints out the remaining balance on its fare cards ('idiot savant' cards?) following its use for transportation. This was driven not by legal mandate, but rather, by provider decision. This suggests that some (perhaps many since the Metro is a 'closed' system and thus, presumably, needn't worry about promoting consumer acceptance as a competitive matter) vendors will in fact address such issues as disclosure and education as a means to promoting reassurance, acceptance, and ultimately, usage, regardless of whether legally mandated or not.

sought as regards their monies. Just as consumers are likely to place a greater value on provider reliability, many new would-be providers are entering markets, adamantly opposed to any governmental oversight, regardless of intentions such as reassuring consumers about the reliability of those providers.

CURRENT CONSIDERATIONS

The uncertainty of the technological and practical statuses of emerging forms of electronic money predictably engenders a legal vacuum. Are 'smart cards' covered by existing EFT legislation? If so, to what extent? Similarly, with EBT programs? Who establishes the rules -- indeed, are there any rules? -- for transfers via the Internet? While the fact of implications for consumers -- potentially monumental -- is undeniable, the specifics are murky at best.

This uncertainty will inhibit consumer acceptance. That is not to say that many consumers will not enthusiastically flock to new transaction forms; indeed, many already are. What it does indicate, however, is that at least in the near-term future, for the vast bulk of consumers any migration to such systems which does occur will take place, at the minimum, on a relatively uninformed, ill-considered, even non-elective basis. Many consumers are already apprehensive about their places in this 'brave new world'; some could probably more accurately be described as paranoid. (And, given the vital role of money to them qua consumers, this is certainly understandable and forgivable.)

As indicated, what consumers want most of all is reassurance regarding these emerging forms of value transfer. They want reassurance regarding:

- their range of options as to the forms their value transfers might take;
- their ability to control access to the information personalizable to them inherent in these transactions¹⁰;
- their insulation from the consequences of transactions that go astray;

¹⁰ Whether or not consumers can **specify and quantify** the specific damages they might suffer through disclosure of such personal information misses the point. Many consumers assign a per se value to information concerning something as personal as their financial information. To reveal or disclose, or to be perceived as possibly leaking such information, even inadvertently, evokes enormous consumer concern, resentment and resistance. And, when demonstrable damages actually do occur -- loss of a job, denial of credit or insurance, etc. -- the reactions will predictably be 'ballistic'.

- their ability to investigate and, where necessary, undo transactions and restore the status quo ante. *

In short, they want reassurance regarding their ability to control the transfers they select and perform -- before, during and after.

For example, as regards so-called 'smart' cards or 'stored value' cards, consumers ideally would be reassured -- through such potential means as system design or architecture, contractual definition of rights and responsibilities, legal mandate, etc. -- regarding the extent of:

- the acceptance of such cards widely enough so as to make them useful (and thus attractive);
- the ability to convert the value to another acceptable form, so as to allow alternative payment means when systemic failure occurs, or simply to 'cash out'¹¹;
- their rights, if any, systemically to freeze the system so as to prevent squandering of the value following loss or theft;
- the capability of 'reloading' the card, and the availability of locations at which to do so, if such exists;
- the ability to control and restrict access to any information accumulated regarding payors, payees and the goods/services obtained via the device¹²;
- the ability to confirm any remaining values on the device;
- the reliability of the issuer so as to enable value retrieval and utilization

¹¹ A systemic failure to accept, for example, a card to pay for a subway fare at midnight makes the attractiveness of alternative means of buying transportation apparent.

¹² The importance seemingly is providing for reassurance regarding a consumer's ability to understand and to control whether or not he or she wishes to allow personal information to be disseminated and for what purposes. Many consumers may wish to permit certain information to be disseminated. Few, I would guess, however, would be willing consciously to cede their ability to control both the type of information which might be divulged and the nature or identity of the parties to whom it might be so disclosed.

when desired¹³;

- the availability of and the capacity to elect alternative payment means (this consideration is especially pertinent for programs where participation may not be elective, for example, Electronic Benefit Transfer programs for recipients of government benefits)¹⁴.

The existence of such a list of concerns should not be construed as damning the product. Rather, however, it reflects how widespread are the areas in which consumers may desire reassurance, how cautious most consumers are likely to be regarding their own monetary values, and by extension, how it might affect their own capacity to function as consumers using such transfer mechanisms.

SECURITY OF INFORMATION

Consumers have an interest, indeed a profound interest in **systemic** security. However, that interest is aggregated. Of more immediate interest to consumers is the security of their **personal** value. Whatever rules evolve regarding the allocation of rights and responsibilities in such systems seemingly then should provide for presumptive rights to allow consumers to exercise these forms of control over what is, after all, their money.

Initial burdens to investigate and resolve disputes involving such payments, for example, seemingly should be placed primarily on the designers and implementers of such systems rather than on end-users. Consumers ought not to be deprived of the prompt retrieval/recrediting of their funds while such investigations are proceeding, except under carefully defined circumstances.

Indeed, the use of electronic means to transfer value is attractive in large part because of the essentially *informational* nature of money. As such, then, the investigation of disputes arising therefrom, i.e., the accumulation of the *information*

¹³ With numerous non-regulated institutions clamoring to issue such payment devices (and in some instances, already doing so), how will consumers determine whether or not the value the store on a card will in fact be retrievable when they wish? In this sense, cards are no different from travelers' checks, or, for that matter, from deposits in any depository institution. Recall the sacred and soothing effect of **federal** deposit insurance.

¹⁴ Conversely, there may well be consumer concerns regarding the adequacy of the **availability** of smart card offerings in retail outlets frequented by certain recipient populations.

necessary to resolve disputes over what happened to the intended transfer could well be considerably **easier** in such systems than in physically-based systems¹⁵. This argues even more strongly for imposing the obligations to do so on the parties best able to do so, i.e., the providers of such systems.

The form by which such impositions take place will likely vary according to the particulars of any given means. It seems unlikely that one set of rules would fairly distribute such burdens among the various parties in all formats. But, since consumers are generally both:

- 1) the originators of the transactions involving their own money; and,
- 2) less able to manipulate the system to reconstruct transactions, retrieve information, or repair damages done,

it seems eminently fair and desirable to place primary responsibility (i.e., presumptive liability) upon the purveyors of the transaction systems for the costs and consequences of misguided or mishandled transactions.

Such a risk/responsibility allocation seems particularly appropriate given the increasing concentration of financial service providers, and the attendant increased routinization and automation of many of their services. As institutions become larger and more dispersed¹⁶, the tendencies to become less practically accessible to human intervention increase. Indeed, one of the constant management challenges to organizations as they become larger is retaining an acceptable level of responsiveness. Thus, the difficulties and frustrations for consumers of trying to investigate and resolve problems will, if anything, probably become greater.¹⁷

¹⁵ The difficulties in retrieving original drafts or items, for example, would be eased in an environment when a few keystrokes could accomplish the functional equivalent of such a task.

¹⁶ Just last Friday (May 1, 1996), for example, came the announcement of the intent to merge of the MOST and HONOR shared EFT networks, already two of the largest networks in the country, continuing a pronounced trend.

¹⁷ This doesn't suggest that larger institutions are necessarily undesirable as a matter of policy. They are increasingly common in large part because of attendant economies of scale enjoyed by them. Rather, it simply recognizes structural changes that market forces are driving, and suggests that consumers exposed to the impacts of such evolutions may well have special and increasing needs.

will be the tendency for the numerous distinct entities within those networks to impose explicit fees for services provided. The proliferation of explicit fees, for example, in ATM networks (so-called 'surcharging' by acquiring terminal placers coming on top of issuer charges) is already well noticed. This tendency, coupled with the increasing general proclivity of traditional depository institutions to maximize their fee-based revenues, is likely to evoke considerable consumer resentment.¹⁸ While it might be argued that prices will become more transparent, and thereby (at least theoretically) more likely to enhance competitive markets, it will also likely engender consumer resentment as explicit fees become both more frequent and greater in amount.

As provider institutions (or combinations of institutions providing such electronic banking services) become ever larger, the notion of ascribing something approaching strict liability for disputes involving smaller, more typically 'consumer-sized' transactions, becomes more appealing. This notion is not without precedent. For example, the credit card rule for liability for unauthorized usage¹⁹ essentially adopts this model. There is some point where it becomes more systemically efficient not to attempt to resolve liability concerns along traditional notions of negligence; rather, allocate most or all liability to the providers of the system absent some showing of fraud.

This provides incentives to design security into such systems to the parties most capable of acting to do so. It also avoids situations where unequal power between institution and consumer leads to unsatisfying results in the event of subsequent dispute. Finally, it also provides a degree of certainty in the sense of the predictability of potential loss exposures faced; and, of course, the predictability of a loss is nearly as important as a business matter as the fact of the loss itself.

Properly designed, it seems likely that certain consumer populations not normally identified with EFT technologies may in fact welcome many aspects of emerging value transfer mechanisms such as 'smart cards'. For example, research I have conducted for TYME Corporation (the shared EFT network in Wisconsin) suggests that lower-income consumers may well find some actual attraction in the perceived anonymity which some forms of electronic value transfer makes possible.

In other words, there are probably societal characteristics and attitudes which might make such cards appealing for these populations. For example, a

¹⁸ One critic has effectively and damningly characterized such charges at ATMs as "charging more for self-service than for full service."

¹⁹ The Fair Credit Billing Act, 15 USC Section 1643.

minority individual in a central city neighborhood may find that the anonymity of such devices overcomes socio/cultural barriers and societal stigmas associated with other, less anonymous payment means.²⁰ Similarly, the capacity to access funds through such a card in limited and individually-selected amounts -- thereby enhancing personal security -- might also be appealing to such populations.

A number of the implications of transference of value on-line and via the Internet are distinguishable in many of these senses only by degree insofar as consumers are concerned. Presumably, coerced participation through lack of alternatives is not so imminent a threat on the Internet; similarly, however, elective participation to achieve potential benefits may be equally unlikely for many populations.

Perhaps the most immediate concern in using such networks to transfer value involves questions which can fairly be characterized as involving that most basic rationale for bank regulation, i.e., safety and soundness. Since it is money -- consumers' money -- that is being transferred, it is critical that the reliability of these purveyors be assured. Ultimately, that involves the 'safety and soundness' of such entities.

Who will assure consumers of the safety of entrusting their funds to such entities? To direct a payment with a simple keystroke represents the ultimate act of payment faith. At a minimum, what must such systems tell or reveal to consumers regarding the risks (and the costs, both explicit and potential) of using their systems? Who will police any such requirements? Given that these systems involve something as basic as consumers' money, ought not consumers receive at least as much substantive reassurance, i.e., consumer protection, as they do with existing value transfer systems?

This doesn't suggest that existing legal models are necessarily right for such emerging technologies. It does suggest, however, that consumers deserve protections and reassurance. New models, balancing the goal of encouraging such new value transfer systems where they can benefit consumers, while still protecting consumers from their unreasonable risks, is crucial. The existing EFT Act envisioned that. It was good policy when enacted in 1978. It remains good policy today.

²⁰ To the extent that this entices such individuals back into the mainstream financial system, they presumably benefit as well from the ameliorating influences of more effective competition to restrain overt costs, a benefit which relatively speaking may be of even greater importance to such persons.

INTRODUCTION OF MR. FRANK WOBST
Before the Subcommittee on Domestic and International Monetary Policy
2128 Rayburn House Office Building

Good morning Mr. Chairman and members of the Subcommittee. As a former member of the Banking Committee, thank you for allowing me to introduce a friend and an important business leader from Columbus, Ohio, Mr. Frank Wobst.

Mr. Wobst is the Chairman and Chief Executive Officer of Huntington Bancshares Incorporated, a bank holding company, headquartered in Columbus and operating in 13 states.

Additionally, Mr. Wobst is a past director of the board of the Federal Reserve Bank of Cleveland and is on the board of a number of corporate and civic organizations. In October 1987, Mr. Wobst was named Honorary Consul for the Federal Republic of

Germany.

Mr. Chairman and members of the Subcommittee, I am proud to have the Huntington National Bank and Huntington Bancshares headquartered in Columbus. I am sure that Mr. Wobst's testimony will be both interesting and informative with regard to the technological developments in currency on payment systems in the United States and abroad.

Again, Mr. Chairman, thank you for allowing me to introduce Mr. Wobst to the Subcommittee.



WILMINGTON
TRUST

Personal direct dial
(302) 651-1599
March 26, 1996

Representative Sue W. Kelly
1037 Longworth House Office Building
Washington, DC 20515

Congressman Kelly:

In response to your question, stored value cards are equivalent to cash. They are intended for transactions under \$20.00. The transfer of value from an ATM to the card is the same as a consumer taking cash from the ATM. This does not reduce float for the consumer. In fact, our research shows that many consumers like to use a stored value card as a budgeting tool to better control their spending of cash.

Our poorer citizens can actually improve their availability through stored value cards. Using smart cards and regional ATM networks, it is possible to transfer various government benefits programs through an ATM onto the chip. This gives the consumer the opportunity to have access to their benefits more conveniently and quickly, enhancing availability.

Sincerely,

R. K. Wilhide
Vice President

RKW:glc

MTA Card Company
 347 Madison Avenue
 New York, NY 10017-3739
 Tel 212 878 0140
 Fax 212 878 0143



March 20, 1996

Honorable Sue Kelly
 U.S. House of Representatives
 1037 Longworth House Building
 Washington, D.C. 20515

Re: Questions for Panelists at the Future of
 Money Hearings on March 7, 1996

Dear Representative Kelly:

You posed the following question in writing to the panelists at the captioned hearing.

My concern, which I would like all the panelists to address, is what effect do you think these new money technologies will have on that venerable institution, the float? Many people use the ability to charge something and not owe the charge for 25 days, or write a check with the knowledge that it will not clear for a number of days to get by day to day. I am concerned that if the system changes to one in which the payee can immediately determine whether the funds are available at that moment, the financial flexibility which many of our poorer citizens rely upon will be gone.

Your question raises a number of important issues relating to electronic cash and commerce. I have limited the scope of my response to the fare payment vehicles that are now being used or are being considered for use within MTA's transit system. MTA now accepts payment for transportation fares in three forms -- cash (buses only), tokens, tickets, passes and the MetroCard. The stored value cards that exist today and are contemplated for the future are targeted at what are now largely cash transactions. Therefore, there will be no significant change in the float or funding delay factor to the consumer as between use of cash today versus use of a stored value card in the future. What will change is that instead of the U.S. Treasury holding the "float" when the medium of payment is cash, the issuer of the stored value card will hold the float. Witnesses at prior hearings addressed this issue in detail.

I trust my reply has been responsive. Please feel free to contact me if I can be of any further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jerome F. Page'.

Jerome F. Page
 General Counsel and Vice President,
 Business Development

MTA Card Company
 A subsidiary of the Metropolitan
 Transportation Authority



UNIVERSITY OUTREACH

Center for Consumer Affairs

Outreach and Continuing Education Extension
University of Wisconsin-Milwaukee
161 West Wisconsin Ave., Ste. 6000
Milwaukee, WI 53203
414-227-3250 FAX 414-227-3267

March 25, 1996

Honorable Sue W. Kelly
Member, US House of Representatives
Committee on Banking & Financial Services
1037 Longworth House Office Building
Washington DC

Dear Representative Kelly:

Thank you for the opportunity to respond to your question following the hearing of March 7 on the Future of Money, Part III, before the subcommittee on Domestic and International Monetary Policy. As one of the presenting witnesses, I am pleased to respond.

Essentially your question addresses the timeliness of settlement when a consumer gives an order directing a payment of funds to a third party. As you indicate, some portion of the population, in contemplating making a payment, routinely factors the delay currently inherent in various payment means into their decisionmaking process to minimize the time between when their account has adequate funds to make such a payment and the time of such payment. Commonly, this is referred to as "playing the float".

To the extent that any new payment means reduces the time between **the giving** of an order to make a payment by the consumer and **the making** of such a payment, the ability of payers to utilize the intervening time is also reduced. This commonly occurs in current paper-based checking accounts, when a consumer writes a check (the order to pay) anticipating that they can effectuate the placement of adequate funds into the account in a timely manner so as to enable the financial institution holding the account to make the payment upon presentment of the check. To the extent that checks generally are paid more promptly, due for example to improvements in clearing of checks between institutions, the ability of payers, consumer or otherwise, to engage in such strategies is reduced.

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Honorable Sue W. Kelly
page 2

Perhaps more frequently, however, this functionally similarly occurs in the credit card world where a significant portion of the card-using population uses the card to obtain goods or services, and **structurally**, is permitted to defer payment to the account issuing institution until shortly before the expiration of the applicable 'grace period', thereby, in effect, obtaining an interest-free loan. Functionally, this is economically equivalent to 'playing the float' with a checking account, albeit for a longer period of time typically.

Note several notions. First, from an macroeconomic standpoint, such a reduction increases overall economic efficiency within the payment system. Second, and perhaps more importantly for consumer-users of various payment systems, shortening such gaps will tend to **reduce** the regressive impacts of such characteristics, and thus, seemingly is desirable rather than to be resisted.

This is easier to comprehend when considering the credit card example. As you might suspect, there is a strong correlation between discretionary income and tendency to use credit cards in this manner, i.e., as a so-called 'convenience' user. As such, higher-income consumers are more able to avail themselves of the economic advantage of delaying final payment when acquiring goods or services. Lower-income consumers, by contrast, are less able to do so, and as such, are more likely to pay interest in connection with using such a device. 'Convenience' users (higher-income consumers generally) are oblivious to the stated interest rate with such an account, since it isn't, by definition, applied to them. Clearly then, this payment structure is highly regressive.

Similarly, with a checking account, higher-income consumers are benefitted to a greater extent (at least conceptually) by the 'float' you describe in the traditional checking account, since they anticipate greater near-term future income and thus can 'play the float', should they so desire, on larger ticket purchases. A consumer expecting a paycheck in his or her account of, say, \$4000 next week, can 'play the float' for a larger amount' -- and thereby realize a greater economic advantage -- than a consumer expecting a paycheck next week of \$1500.

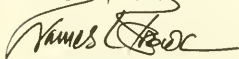
Note also, there is nothing to preclude newly-emerging payment technologies from incorporating the functional equivalent of the current 'float' into the timing of final settlement in such new technology. Presumably, the market would determine whether or not -- and if so, at what price -- there exists a demand for an electronic payment means which **by design** delays finality of settlement by some pre-determined period.

Thus, while many consumers may well take advantage of

Honorable Sue W. Kelly
page 3

existing inefficiencies in current payment systems, that is not necessarily evidence that limitations on those inefficiencies are to be resisted. On net, the benefit to consumers as payers, both individually and collectively (through greater systemic efficiencies) may well outweigh the 'costs' of the loss of such inefficiencies.

Very truly yours,

A handwritten signature in dark ink, appearing to read "James L. Brown", with a stylized flourish at the end.

James L. Brown
Director
Associate Professor



April 9, 1996

EDS

The Honorable Sue W. Kelly
U.S. House of Representatives
1037 Longworth House Office Building
Washington, DC 20515

Dear Congresswoman Kelly:

EDS is pleased to provide a response to the question you submitted following the March 7 hearing on "The Future of Money." Your question related to the issue of float and whether new payment technologies will have an adverse impact on the flexibility consumers now enjoy in making payments via check or credit cards. It was directed to Coley Clark, Corporate Vice President for the EDS Financial Industry Group, who testified at the hearing.

We respectfully submit the following response:

The types of electronic money systems under discussion--smart cards and digital cash--are intended for small purchase amounts for which one would normally use cash. Purchasing a newspaper would be a good example. In such examples of small purchase payments, the question of float does not apply.

Float does apply on the large purchases or monthly installments such as mortgage and car payments. Theoretically, consumers will have the same financial flexibility with electronic banking services such as electronic bill paying as they do with traditional paper-based methods such as checks mailed to creditors. Consumers can select the exact day on which their electronic payments will be automatically transmitted for payment. What is more, depending upon the connectivity between the consumer's electronic payment system and the payee, the degree of float control could conceivably exceed that which consumers enjoy today.

As for credit card purchases, we do not believe that the advent of new delivery channels like the Internet will have an impact on credit card billing cycles. Even on the Internet, a credit card transaction is still a credit card transaction.

We appreciate your interest in the electronic payment system and hope you will contact us if you have further questions about the role of information technology in financial services. I can be reached at (202) 637-6722.

Sincerely,

Monica Welch

Monica B. Welch
Manager, Financial Services Policy

cc: Kim Trimble

Office of Government Affairs
Suite 1300 North
1331 Pennsylvania Avenue, N.W.
Washington, DC 20004
(202) 637-6700
Fax: (202) 637-6739

REC'D BILL NORWOOD

Questions for Panelists at the
Future of Money Hearing
on March 7, 1996

The Honorable Sue W. Kelly

My concern, which I would like all the panelists to address, is what effect do you think these new money technologies will have on the venerable institution, the float? many people use the ability to charge something and not owe the charge for 25 days, or write a check with the knowledge that it will not clear for a number of days to get by day to day. I am concerned that if the system changes to one in which the payee

04-02-96

From: Bill Norwood CONFIDENTIAL

12:52 PM

can immediately determine whether the funds are available at that moment, the financial flexibility which many of our poorer citizens rely upon will be gone.

To a great extent, the condition described has already been curtailed by new technology. The time between purchase and money transfer has been greatly reduced in recent years through advancements in communication and electronic funds transfer technologies.

The debit world and the prepaid world leave little room for a consumer to take advantage of time delays. There is, however, a positive side to these newer methodologies. First, it allows consumers to have more instant access to their own monies. A deposited check should not have a hold placed on it until the funds clear, as is common in past and most current systems. Next, non-banked consumers will have less expensive avenues to obtain their cash--or its electronic equivalent--than in the past. No longer should an individual need to pay a check cashing service exorbitant fees to obtain their funds. Finally, newer methodologies will likely make it possible for individuals to operate in a non-banked world with far fewer restrictions. Financial processing services will be available from organizations other than traditional financial institutions--organizations that will likely earn their living off of fees paid by merchants rather than consumers.

In the future, an individual who truly requires time between purchase and payment will likely need to rely on credit methodologies. The newer systems, however, may change the environment that currently leads to this need.



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